2

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 DAF 11,6 n 1

1. Edition

PE 6 P 100 A 320 RS 384 Z RQ 250/1100 PA 517 D

supersedes

DAF

company: engine:

**DKL 1160** 

Port closing difference between control-rod travel 9 mm and control-rod travel 21 mm.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
(3,15-3,35) RW 9 mm (from BDC)
3,20-3,30 RW 9 mm (from BDC)

Control rod travel nim 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
11,5+0,1	10,9 - 11,2	0,5			
7,2-7,4	1,0 - 1,4				
-	C. Sp. 4-5	0,3			
	nim 2 11,5+0,1	travel nim 2  11,5+0,1  10,9 - 11,2  7,2-7,4  1,0 - 1,4	travel nim 2  11,5+0,1  10,9 - 11,2  7,2-7,4  1,0 - 1,4	travel nim 2 cm³/100 strokes 3 cm³/ 100 strokes 4 cm³/ 100 strokes 4 2 11,5+0,1 10,9 - 11,2 0,5 7,2-7,4 1,0 - 1,4	travel cm <sup>3</sup> /100 strokes 2 cm <sup>3</sup> / 100 strokes 4 cm <sup>3</sup> / 100 strokes 2 cm <sup>3</sup> / 100 strokes 3 cm <sup>3</sup> / 100 strokes 3 cm <sup>3</sup> / 100 strokes 2 cm <sup>3</sup> / 100 strokes 2 cm <sup>3</sup> / 100 strokes 3 cm <sup>3</sup> / 100 strokes 2 cm <sup>3</sup> / 100 strokes 3 cm <sup>3</sup> / 100 strokes 3 cm <sup>3</sup> / 100 strokes 2 cm <sup>3</sup> / 100 strokes 3 cm <sup>3</sup> / 100 strokes 2 cm <sup>3</sup> / 100 strokes 3 cm <sup>3</sup> / 100 strokes 3 cm <sup>3</sup> / 100 strokes 2 cm <sup>3</sup> / 100 strokes 3 cm <sup></sup>

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin PRG che rev/min 1	Control rod travel	Full-load : Setting por rev/min 3	•	_	cifications (4)	Idle spec Setting p rev/min 7	Control red travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod	3
700	15,6-16,4	700	16,0	10,8	1140-1155	225	7,3	100 225	min.7,5 7,2-7,4			
	·			4,0	1175-1205			325 <b>-</b> 600	365=2,0 max.1,0			

Torque-control travel on flyweight assembly dimension a =

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting fuel delivery deletely less than the less than th		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7	
600	109,5 - 112,5		1050	106,5 - 111,5	100	21,5	
						7,2	

Checking values in brackets

# **Test Specifications** Fuel Injection Pumps 1 and Governors

VDT-WPP 001/4 SCA 11.0 k 1

PE 6 P 90 A RS 276 ROV 250-1100 PA241

Port-closing test with/without ROBO diaphragm

aupersedes company:

1. Edition

Scania

engine:

D 11 - 190 PS

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,6 + 0,1

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	8,5 - 9,2	0,4			2,5 ± 0,1 **
600	9 12 15	2,9 - 3,9 7,4 - 8,4 12,2 -13,5				(max.2,2-2,9)
200	9	1,8 - 2,8				

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_\_ the delivery-valve spring pre-tension

accordingly.

B. Governor Settings

Upper rated s	speed		Intermediat	e rated sp	eed	Lower rated	speed	•	Sliding	iceve travel
Degree of deflection of control		nevai /	Degree of deflection of control	;	Control rod travel	Degree of deflection of control		Control rod travel		0
lever		rev/min (2	lever	rev/min	mm (4)	lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1150 1380	15,0-18, 0 - 1,	_ 1	-	-	ca.10	200 300	5,8-8,0 3,1-4,4	200 350	0 -1,0 2,0-2,5
ca.62	1100 1150 1200	15,0-17,8 10,2-13,8 5,0-10,	3				400 500 600	2,6-3,6 1,8-3,0 0,8-2,0 -		4,3-4,7 8,3
	1250 1320	0 - 5,				<b>3</b> a	780	0,6-2,0 -	•	-

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)		Starting Idle switchir	• •	Torque- travei	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	r <b>ev/</b> min	cm <sup>8</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1080	142,0-144,0	1135-1145*	500	135,0-139,0	225		1,5):	4
				,	1200 disp	14 - 24 persion.max.4		

Checking values in brackets

\*1 mm less control rad travel then col. 2



# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4

PE 8 P 120 A 920/4 RS3030

RQV 350/575-750 PA273R

1. Edition

Rolls Royce company:

engine:

C 8 T (340)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings 3,50-3,60 Port closing at prestroke (3,45-3,65) mrn

mrn (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
720	13,8	24,7 - 25,1	0,5(0,8)			
þ	(+0,1)		7			
350	6,0			•		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding	leeve travel
deflection	rev/min Control	Control rod (1a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control	rod travel mm	rev/min 2a	of control lever	rev/min	mm 4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	750 790 860	15,0-18,6 0 - 8 0	ca.45	550 600 670 685	11,8-17,6 7,3-12,0 0 - 2 0		300 450 550 625	6,3-8,2 3,6-4,0 1,6-4,0	325 400- 750	0,4-1,5 500= 1,9-2,1 8,3
						<u>3a</u>			-	-

Torque control travel a =

#### C. Settings for Fuel injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 2b limitation intermediate speed			Starting idle switchir	. 0	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
720	247,0-251,0 (244,0-254,0				100	ca.16 mm RW		

es in brackets

9 1 mm less control rod travel then col. 2

0

Festoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

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WPP 001/4
1. Edition

PE 6 P 110 A 320 RS 328

RQV 300-1500 PA 303 R

aupernedes

company

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Tosters

#### A. Fuel Injection Pump Settings

Port closing at prestroke 3,5 + 0,1 mm (from BDC)

21 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 8
1000	12,0	17,3 - 18,0				4
600	6,0 15,0	5,2 - 6,4 10,7 - 22,6				
200	6,0	1,9 - 2,9				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated spe	eed	Lower rated	speed		Stidings	laeve travel
Degree of deflection	rev/min Control	Control rod travel	<b>(1a)</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		①
of control lever	rod travel mm	mm rev/min	<b>(2a)</b>	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.64	1540 1600 1700 1800	15,0-17 11,0-14 2,6- 9 0 - 3	,8				ca.11°	200 440 600 900	6,8-8,0 3,6-5,0 2,6-3,8 0 -1,2	1540	8,2
							<u>3a</u>				

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

	d stop np. 40°C (104°F) . 2	limitation intermediate speed	(30)		idle switchir	ng point	Torque-contro! Stravel  Control retravel	
rev/min	cfh³/1000 strokes .	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm -
1	2	3	4	5	6	7	8	9
ca. 1	0 mm RW − Car	1540 ry out adjust	ment	on engine				÷

Checking values in brackets

\*1 mm less control red travel then cel. 2

# **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 PEN 7,0 e 1. Edition

PE 6 P 100 A 320 RS386

EP/RSV 200-1200 P

supersedes

Volvo-Penta

company engine

MD 70 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,80-2,90

Port closing at prestroke (2,75-2,95)

mm (from BDC)

s		Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm²/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
	1000	8,6-8,7	7,2 - 7,4	0,4(0,8)			2,5±0,1
	225	5,8-6,0	0,9 - 1,3	0,2(0,5)		•	(max.2,2-2,9)
L							

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Degree of deflection of control lever 1	r rated speed Control rod travel mm		Intermed	diate rated	speed 6	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod travel  mm	3 To	rque control Control rod travel mm
1oose	800 x =	0,3-1,0 5,2				ca.27	225 100	5,4 min 20		
ca .67	1270-13	250 = 7,6 300 = 4,0 300 = 1,7		0			225 335-395 550	5,8-6,0 = 2,0 0 - 1		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat		iel delivery paracteristics	Starting t	fuel delivery 5	4 tdie stop		
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to :) rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes 5	rev/min	cm 1000 strokes	rev/min 8	Control rod travel mm	
1000	72,0 - 74,0 (69,0 - 77,0)	1240-1250*			100 225	210 - 260 10 - 14		÷	

Checking values in brackets

\* 1 mm less control rod travel than col 2

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 21.6 a 1. Edition

PE 12 P 120 A 520/5 RS 428

RSUV 300-1150 POA 324 DR

supersedes

MWM

company

D 234 V 12

1 - 2 - 9 - 10 - 5 - 6 - 11 - 12 - 3 - 4 - 7 - 8je  $30^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

engine

330 kW (449 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Difference cm²/ 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,6-9,7	17,0 - 17,4	0,5(0,9)			
300	6,5-6,7	2,8 - 3,6	0,8(1,2)		F	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	r rated speed Control rod travel mm			liate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm		rque control Control rad travel mm
loose	800 x =	0,3-1,0 4,0	-	-	-	ca.22	300 300	6,1 6,5-6,7	-	-
ca.64		1190-1200 1235-1265 0,3- 1,7					410-470			

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	Rotational- speed limitat			Starting fuel delivery 5 48 Idle stop			
rev/min	emp. 40°C (104°F) cm <sup>2</sup> /1000 strokes 2	Note: changed to .) rev/min 3	rev/min	cm\$1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1150	170,0-174,0 (167,0-177,0)	1190-1200*	-	-	100	240,0-260,0 / 15,8 - 16,0 mmRW		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.82

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. € 1980 by Robert Bosch GmbH. Postfach 50, D-7600 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

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# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 PEN 7,0 g 1 1. Edition

En

PE 6 P 110 A 320 RS 390

RSV 200-1200 P4/305

supersedes

company

Volvo-Penta TD 70 GG

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

3,0 - 3,1 (2,95- 3,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>9</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mim 6
700	11,3+0,1 10,0 - 10,2		0,4(0,8)			2,5 ± 0,1
200	6,1-6,3	1,7 - 2,7	0,25(0,55)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in E

# **B. Governor Settings**

Upper rated speed rev/min  Degree of deflection of control rate of travel mm rev/min  lever 1 2 3		Intermediate rated speed			Control- lever deflection in degrees	Lower rated speed Control rod travel		rev/min	rque control Control rod travel	
loose	800	0,3-1,0	-	-	- 16	ca.20	200	5,7	10	11
ca.70	x = 10,3 4,0 1400	4,0 1240-1250 1250-1280 0,3 -1,7					100 200	min.19,0 6,1-6,3		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational- speed limital September 1997 Characteristics			Starting fuel delivery (5)			Idle stop	
	cm <sup>9</sup> /1000 strokes 2	changed to) rev/min 3	rev/min	cm <sup>9</sup> /1000 strokes 5	rev/min	cm <sup>2</sup> /1000 strokes 7	rev/min 8	Control rod travel mm	
700	100,0-102,0 (97,0-105,0)	1240-1250*	-	-	100	10,0-21,0 mm RW	-	-	

Checking values in brackets

\* 1 mm less control rod travel than ool 2

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung  $\varepsilon$  1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

# **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 11,0 q 2. Edition

En

PE 6 P 110 A 720 RS 310

EP/RSV 350-1100 P 1/310 R

**Supersedes** 

company

Scania

engine

**DSI** 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

2,4 + 0,1

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Festoil-ISO 4113

mm (from BDC)

speed	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3		Control rod travel mm 2	Fuel delivery  cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	14,0	19,3 - 19,5	0,6(0,8)			2,5±0,1**
	(±0,1)					(max.2,2-2,9)
350	5,5 (±0,1)	1,0 - 1,4	0,2(0,7)			
600	14,0 (+0,1)	19,4 - 19,8	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in In the case of greater dispersion alter the delivery-valve spring pre-tension

# B. Governor Settings

1 Uppe	r rated speed		Intermediate rated speed			Lower rated speed			3 Torque control		
Degree of deflection of control	travel mm	ol rod Control rod travel mm rev/min			Control- lever deflection in degrees		rev/min	Control rod travel mm	rev/min	Control rod travel mm	
lever 1	2	3	4	5	6	7	8	9	10	11	
ca.67	1100	16,0		without auxiliary spring			350	6,0		[	
	1150 1200	11,7 6,0					100 350		1		
20	1150 1200 1350	10,4-12,5 4,4- 7,8 0,3- 1,0	With			9	400 550	3,2-4,7 0 - 1		max.	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat.		net delivery paracteristics	Starting f	uel delivery 5	4a Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm¥1000 strokes	rev/min	cm <sup>2</sup> /1000 strokes 7	rev/min	Control rod travel mm
1000	193,0-195,0 (190,0-198,0)	1140-1150*	600	194,0-198,0 (191,0-201,0) dis		12 - 16 n max. 2,0 28 - 33 V5,5mm)	)**	

Checking values in handkets

\* 1 mm less control rod travel than col 2

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# Test Specifications Fuel Injection Pumps 2 and Governors

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WPP 001/4 DAF 11,6 b 2. Edition

En

PE 6 P 90/320 RS142 PE 6 P 90A320 RS239

RQ 200/1000 PA98/1R

supersedes

company:

8.72 D A F

engine:

**DKDL** 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2.8 + 0.1

mm (from BDC)

 $(^{+0,15}_{-0.05})$ 

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	10,4 - 11,2	0,5			
600	9 12 15	4,5 - 5,9 9,1 - 10,8 14,0 - 15,9				
200	9	3,5 - 4,5				

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Checking of slider PRG check Control rod travel rev/min mm 1 2	Full-load spee Setting point Cont red t rev/min 3	Test spec troi Control travel rad travel	rev/min	Idle spee Setting p rev/min 7	coint Control rad travel mm	Test spe	cifications 5 Control rod travel mm	 Control rod (3) travel mm
450 15,7-16,3	450 16	,0 1050 1080 1120 1160	15,6-16,0 9,6-14,0 0 - 7,7 0 - 1		0		6,0-8,1 3,4-5,6 0 -1,6 0	

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel delive	ery characteristics	Starting f	ue! delivery d G
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:/ mm
850	107,7 - 109,5 (105,5 - 111,5)			•~		

Checking values in brackets

estoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 1. Edition

PES 6 P 110 A 720/3 RS 3036

ROV 300/450-900 PA 372KR

company:

Mack **ETAY 673 A** 

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,35-2,45

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	15,2	22,8 - 23,0	0,6			
300	5 <b>,</b> 0	1,2 - 2,2	0,2			

Adjust the fuel delivery from each outlet according to the values in [

# **B.** Governor Settings

deflection	rev/min Control rod travel mm	Gontrol rod ta travel mm rev/min 2a 3	Intermediate Degree of deflection of control lever	rated sports rev/min	Control rod travel	Lower rated Degree of deflection of control lever	speed rev/min 8	Control rod travel	Slicting s	mm
ca.69	970 1050 1100 1200	15,5-18,0 7,0-11,6 1,7- 7,8 0	-	•	-		250 300 600 700	9,8-11,3 7,5- 8,5 1,3- 2,5 0 - 1	200 500	0,2-1,2 4,0-4,4 6,3-6,7 8,3

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-rod Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deli- high idle s	very characteristics (5a)	Idle	fuel delivery 6	Torque- travel	control 5	
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rav/min	travel mm	
1	2	3	4	5	6	7	8	9	
900	228,0-230,0	940-950*	725	234,0-238,0	100	110,0-170,0			
			600	228,0-232,0	300	14,0- 24,0			
				PLE:	300 0.74	94,0-109,0 0-0.820			

Checking values in brackets

🐴 mm less centrol rod traval than col. 2



Festoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

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WPP 001 Fiat 13,8 e 2. Edition

En.

PES 6 P 120 A 820 RS3058

RQV 300-1300 PA454KR

aupersede

company:

2.80

engine:

Unic-Fiat 8220-02-142

All test appecifications are valid for Bosch Fuel Injection Pump Test Benches and Tasters

#### A. Fuel Injection Pump Settings

Port closing at prestroke 3,60-3,70 mm (from BDC

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>2</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,2-9,3	14,3 - 14,7	0,5(0,8)			
300 500/700	5 <b>,1-5,</b> 3	1,7 - 2,3 C, 4-5	0 (0,7) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated t	peed			Intermediate	rated sp	ed	Lower rated	speed		Stidiogs	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	(19) (28)	Degree of deflection of control lever	rev/min 5	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel mm 3		0
ca.68	1300 1550	15,2-17, 0 - 1	,8 I	-	•	-	ca.14	100 300	min.6,7	300	1,0-2,0 3,5-4,0
ca.60	8,2 4,0	1340-135 1410-144					320 <b>-</b> 430			1320	8,3

Torque control travel a =

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		limitation intermediate speed				fuel delivery 6	Torque- travei	Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm in a	
1	2	3	4	5	6	7	8	9	
1300	143,0-147,0 (140,0-150,0)	1340-1350*	500 700	103,0-109,0 (100,0-112,0) 123,0-129,0 (120,0-132,0)		150,0-170,0 20(80-240)	900 700	9,2-9,3 9,1-9,3 8,8-9,0 8,6-8,7	

Checking values in brackets

? 1 mm less control and travel thes cel. 2

10.80

BOSCH

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# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4
3. Edition

En.

PE 6 P 120 A 321 RS 359

RQV 250-1200 PA 254R

aupersedes

3.78

company: engine: Berliet MID 62030

(175 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(3.45-3.65)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strakes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control vave) mm 6
1200	10,3	14,3-14,7	0,5(0,9)			
250	(+0,1) 5,65,8		0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated s	peed			Intermediate rated speed				Lower rated speed				Sliding e	Jeeve travel
deflection	rev/min Control rod travel	Control rod travel	9	Degree of deflection of control		Contro travel	lrod	Degree of deflection of control		Control ro travel	d	Citating a	<u> </u>
	mm 2	rev/min ( 3	29)		rev/min 5	mm 6	•	lever	rev/min 8	mm mm	3	rev/min 10	mm 11
ca.68	1200 1450	15,2-17 0 - 1	,8	•	•		•	ca.13	100 250	min.7	,8	800	0,3-1,1 4,3-4,7
ca.66	9,5 4,0	1240-125 1300-13							720	570=2,( 0 - 1	) -	1190	8,3
								<b>3</b> a					

Torque control travel a =

wu

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 2b fimitation intermediate speed	Fuel delivery characteristics 5a S high idle speed 5b			fuel delivery 6	Torque- travel	Control (5)	
rev/min	cm³/1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel	
1	2	3	4	5	6	7	8	9	
1200	139,0-143,0 (136,0-146,0)	1240-1250*		_	100	140,0-190,0			
					100	-170(80-190)		b	

Checking values in brackets

\*1 mm less control rod travel then cel. 2

10.78

BOSCH

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# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4

3. Edition

PE 6 P 120 A 320 RS 341

ROV200-1100 PA 322 DR

supersedes

company:

AEC

engine:

L 12

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

ort closing at pres		35-3,55)	mm (from BDC)	Control	Cy1. 6	Contra and Associantes
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control-valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1100	10,2-10,3	18,0 - 18,4	0,5(0,8)			
225	7,6-7,8	3,5 - 4,1	0,4(0,7)			
600/500	-	C, 4-5	0,7(1,0)			

# **B.** Governor Settings

Upper rated	peed		Intermediate	rated sp	eed	Lower rated	speed	1	Sliding a	Jeeye travel
	rev/min Control rod travel	Control rod (a)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Centrol rod travel		0
lever		rev/min (28)	lever	rev/min	mm (4)	lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1100 1300	15,2-17,8 0 - 1,0			·	ca.29		min.9,2 7,6-7,8 190=2,0	225 425 1150	1,4 3,3-3,4 7,9
ca.58	9,3 4,0	1140-1150 1180-1210				<b>3</b>		,,,		

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		imitation intermediate speed				fuel delivery 6	Torque- travei	Control rod
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strakes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	180,5-184,5 (177,5-187,5)		600 500	132,0-138,0 (129,0-141,0) 120,0-124,0 (117,5-127,5)	400	100,0-130,0 35,0- 41,0 150(80-170)	500	10,2-10,3 10,7-10,9 10,7-10,9

Checking values in brackets

†11 mm less control rod travel then cel. 2

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 9,8a 2. Edition

PES 6 P 110 A 820 RS381

RQV 225-1300 PA 430/2R

supersedes

1.79

company: engine:

Unic-Fiat X 200

All test apecifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings 2,00-2,10

LOI LOIDENING ET PLOS		95-2.15)			مستعيب والمستعيب	
Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>2</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1300	9,6-9,7	10,2 - 10,4	0,4(0,8)			
225	6,8-7,0	1,6 - 2,2	0,4(0,7)			
			l		l	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection	rev/min Control	Control rod ta	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever	rod travel mm	rev/min (2a)	of control lever	rev/min	mm (4)	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1300 1600	15,2-17,8 0 - 1	-	<u>.</u> .	-	ça.11	100 225	min.8,5 6,8-7,0	225 450	0,8-1,0 2,8-3,2
ca.58	8,6 4,0	1340-1350 1425-1455					460-5 600	20= 2,0 0 - 1	1350	8,5
						<b>3a</b>				

Torque controi travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		limitation intermediate speed	Fuel deliv	rery characteristics (56)	Idle			Control rod
rev/min	cm³/1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1300	102,0-104,0 (99,0-107,0)	1340-1350*			100	170,0-210,0		

Checking values in brackets

\* 1 mm less control rad travel then cal. 2

2,79

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps ① and Governors

WPP 001/4 PEN 10,0 c 1. Edition

PE 6 P 110 A 320 RS138

ROV 250-1100 PA401/2R

**Supersedes** 

company: engine

Volvo-Penta HD 100 D

177 kW (240PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Renches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	8,6-8,7	8,7-8,9	0,4(0,8)			2,5±0,1** (max.2,2-2,9)
250	5,6-5,7	0,8-1,2	0,25(0,6)			(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
					1	
:						

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_\_.

In the case of greater dispersion alter the delivery-valve spring pre-tension

# accordingly. B. Governor Settings

Upper rated	speed			Intermediate	rated sp	eed		Lower rated	speed	_		Chidon a	leeve travel
Degree of deflection of control		uavo:	וכ	Degree of deflection		Control retravel	od	Degree of deflection		Control red travel		SHOING S	1
lever	rod travel mm	ten/win (		of control . lever	rev/min	mm	<b>(4)</b>	of control lever	rev/min	mm (	3)	rev/min	mm
1	2	3		4	5	6		7	8	9	<u> </u>	10	11
ca.50	1100 1400	15,2-17, 0 - 1	8	-	-	-		ça.11	100 250	min.8, 5,6-5,	4	200	0,2-0,8
ca.45	7,6 4,0	1160-117 1205-123							345-3 500	65 = 2, 0 - 1	0	1170	8,2
								<b>3</b>				-	~

Torque control travel a =

## C, Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed (2b) limitation intermediate speed	Fuel deli- high idle :	very characteristics (5a)	Idle	fuel delivery (6)	Torque- travel	Control roc
rev/min	cm³/1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
700	87,0-89,0 (84,0-92,0)	1160-1170*		dis	100 250 persi	300 - 340 10 - 14 on.max.2,5)	**	

Checking values in brackets

4.1 mm less control rod travel then col. 2

Festoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 2. Edition

PE 6 P 100 A 720 RS 414

RQ 300/1175 PA 507

supersedes

company:

4.80

engine:

FBW CU 6 A

1 - 5 - 3 - 6 - 2 - 4

0 -60 -120-180-240-300  $\pm 0,50(0,75)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings (2,75-2,95) Port closing at prestroke 2,80-2,90 m

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175	12.4	12.3 - 12.5	0,3(0,6)			
300 600	+0,1 8,1-8,3 -	1,7 - 2,3 C, Sp. 4-5	0,3(0,5) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Checkin PRG che	(1)		cifications (5)	Torque o	control 3						
rev/min 1	Control rod travel mm	rev/min 3	Control red travel mm 4	Control red travel mm 5	rev/min 6	rev/min 7	Control rad travel rmm 8	r <b>e</b> v/min 9	Control rod travel mm 10	rev/min 11	travel
550	15,6-16,4	550	16,0	11,4	1220-1235	300	6,0	100	min.7,5	1175	12,4-12,5
				4,0	1285-1315			300 390-	5,9-6,1 430=2,0	600	12,4-12,6

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor co feet oil temp	elivery on ontrol lever p. 40°C (104°F)	er (2) (3a) (3b)				fuel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes:/ mm
LDA 1175	0,7 bar 123,0 - 125,0 (121,0 - 127,0)		LDA 600	0,7 bar 116,0-120,0 (113,0-123,0)	100 300	120,0 - 140,0
		·	LDA 600	0 bar 81,0 -85,0 (78,0 -88,0)		

Checking values in brackets

# D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting		Measurement		Control rod traveXXXX	
	Gauge pressure =	bar	Gauge pressure =	bar	mm (XX -	
414 - 507	0,7 bar				12,6 - 12,7	
			0,35		12,0 - 12,1	
			0,25		11,1 - 11,3	
			0		10,7 - 10,8	

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4

1. Edition

PES 6 P 120 A 420RS 3028

RQ 300/1100PA193DR

company:

supersedes

Saurer-Arbon

3028

RQV250-1100PA194DR

engine:

D2 KT290

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2.85 - 3.05)

mm (from BDC)

Rotational speed rev/min 1		Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,9	22,8 - 23,2	0,5(0,8)			
	(+0,1)					
1100/700	Section	C, col.4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

RQ..193 DR

Checking PRG chec		Full-load a Setting po			cifications (4)	kille spec Setting p	_		cifications (5)	Torque d	(3)
	Control rod travel mm	rev/min	Centrel red travel rnm 4	Centrel red travel mm 5	rev/min	rev/min 7	Control red travel coco 8	rev/min 9	Control rod travel mm 10	rev/min	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,9	1145-1160 1200-1240		1	100 300	mind.7,5 5,9-6,1		11,9-12,0 11,9-12,0
1120 1300				4,0	1200-1240			440 -	480=2,0	300	11,5 12,0

Torque-control travel

0,3

Speed regulation: At

1 mm less control rod travel

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor d Test oil ten	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting for Idle spee	uel delivery d Control
rev/min	cm³/-1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
LDA 1100	0,7 bar 228,0-232,0 (225,0-235,0)		LDA 700 LDA 1100	0,7 bar 200,0-205,0 (197,0-208,0) 0 bar 178,0-184,0 (175,0-187,0)	100	170,0-190,0

Checking values in brackets

Testoil-ISO 4113

# **B.** Governor Settings

Upper rated s	speed			Intermediate	rated spe	ed	Lower rated	speed		Siding sleeve travel		
deflection	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3		Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	(+0,1) mm 11	
ca.68°	1100 1380 1145 1220	15,2-17 0 - ca.10,9 ca. 4,0	1				ca.12°	100 250 410-	mind.7,6 5,9- 6,1 490= 2,0	500	11,9 11,9	
							(3a)					

Torque control travel a = 0,6

mm

# C. Settings for Fuel Injection Pump with Fitted Governor

1	Full-load de Control-rod Test oil tem		Rotational-speed 2b limitation intermediate speed	Fuel deliv character high idle s	istics	Starting Idle switchin	fuel delivery 6	Torque- travel	Control rod
-	rev/min	cm <sup>3</sup> /1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes	ten/wiu	cm <sup>3</sup> /1000 strokes	rev/min	
1	1	2	3	4	5	6	7	8	9
	LDA 1100	0,7 bar 228,0-232,0 (225,0-235,0)	1140-1150*	LDA 700	0,7 bar 200,0-205,0 (197,0-208,0		170,0-190,0		
				LDA 1100	0 bar 178,0-184,0 (175,0-187,0				

' 'ting values in brackets

\* 1 mm less control rod travel than co: 2

# D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm
3028 - 194DR 3028 - 193DR	<b>.0,6</b> 8	0,22 0,13 0	11,9 - 12,0 11,3 - 11,5 10,5 - 10,6 10,1 - 10,2

En

2

Testoil-ISO 411

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 DAF 8,3 h 2. Edition

PE 6 P 100 A 720 RS343

RQ 250/1200 PA331R EP/RSV 250-1200 P 0/417R./. supersedes

6.76

company:

van Doorne

engine:

DHU 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,5 + 0,1

mm (from BDC)

 $(^+0,15)$ 

Rotational speed rev/min 1	Control red travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,4 - 11,7	0,5			
600	9 15	4,2 - 5,0 15,6 - 17,0				
200	9	1,9 - 3,3				

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

RQ ... 331 R

Checkin PRG che rev/min 1	Control rod				rev/min	Idle spec Setting p rev/min 7	Control rad travel	Test spe	cifications 5 Control rod travel mm		Control (3) Control rod travel mm
700	15,7-16,3	700	16,0	1220 1250 1320 1400	15,6-16,0 10,4-15,0 0 - 7,8 0 - 1		0	150 250 400 500	6,4-8,1 5,0-7,0 2,2-4,4 0	-	-

Torque-control travel on flyweight assembly dimension a =

1245-1260 - 0,7 bar Speed regulation: At

1 mm less control

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting f	uel delivery ed 6
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rad travel cm <sup>3</sup> /1000 strokes:// mm 7
LDA 1000	0,7 bar 127,0 - 130,0 (125,0 - 132,0)		LDA 500	0 bar 89,0 - 93,0 (87,0 - 95,0)		
						./.

Checking values in brackets

The numbers denote the sequence of the tests

# **B. Governor Settings**

EP/RSV . 417R

	r rated speed Control rod travel mm		Intermed	iate rated		Control- lever deflection in degrees 7		rated speed   Control rod travel   mm	3 To	rque control  Control rod  travel  mm
ca.55	1200 1300 1350	16,0 9,9 5,9	with auxi	out liary	sprin	ca.28	250 100 250	7,0 19 - 21 6,7-7,3	400 300	0 1,2-1,8
ca.53	1200 1300 1430	12,4-12,5 5,0- 6,8 0,3- 1,0	, ,,, -,,	liary	sprin	J	400 530	1,0-3,0 0 - 1		

# C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop mp. 40°C (104°F)	6 Rotational- speed limitat.	39 Fu	nel delivery aracteristics	Starting t	iuel delivery 5	idle stop		
rev/min	cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm 9	
LDA	0,7 bar		LDA	0 bar					
1000	127,0-130,0	1270-1280*	500	89,0-93,0					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure increasing XX

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm (1)
	Gauge pressure = bar	Gauge prossure	(1)
343 - 331R	0,49		- 0,1 - 0,2
+ 417R		0,23	

Notes:

(1) when n =

1000 rev/mirr and gauge pressure =

0,7

bar (= maximum full-load control rod travel)

En

3

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 FBW 11,9 a
1. Edition

En

PE 6 P 120 A 721 RS 446

RQ 250/1025 PA 619

supersedes

company:

FBW

engine:

EU 5 A/ESA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2.95-3.15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000 250			0,5(0,8) 0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Checkin PRG che	g of slider ock Control rod	Full-load s Setting po	•	•	cifications (4)	Idle spec	-		cifications 5	Torque (		3
rev/min	travel mm 2	rev/min 3	rad travel mm 4	red travel mm 5	rev/min 6	rev/min 7	rod travel	rev/min 9	travel	rev/min 11	travel	
550	15,5-16,4	550	16,0	9,8 4,0 1250	1070-1085 1135-1165 0 - 1,0		7,1	100 250	min.8,6 7,0-7,2	825	10,8-10, 10,9-11, 11,5-11,	,2

Torque-control travel on flyweight assembly dimension a =

U,5

1070-1085 min<sup>-1</sup> Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np. 40°C (104°F)	ntrol lever (2) (3a)		Bry characteristics 3b	Starting f	uel delivery d Centre
rev/min 1	cm <sup>3</sup> /~1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /~1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes;/ mm
LDA 1000	0,7 bar 196,0-200,0 (193,0-203,0)		LDA 600	0,7 bar 174,0-180,0 (172,0-182,0)	100	150,0-170,0
			LDA 600	0 bar 126,0-130,0 (123,0-133,0)		

Checking values in brackets

# D. Adjustment Test for Manifold Pressure Compensator

FBW 11,9 a

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting .		Measurement		diminution Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure =	bar	mm (1) .
PE6PRS 446 PA 619	0,7		0		11,5 - 11,6 9,4 - 9,5
•			0,5		10,9 - 11,0
			0,41		9,9 - 10,1

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/\$ SAU 12,0 a Edition

PES 6 P 120 A 420 RS 3063

RQ 300/1000 PA 515

supersedes

company:

Saurer D3 KT 80,1

1 - 4 - 2 - 6 - 3 - 5 je  $60^{\circ}$ 

engine:

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Rump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control red travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,2	20,7 - 21,1	0,5(0,8)			
300 700/400	5,7-5,8 -	1,3 - 1,9 C, Sp.4-5	0,8(1,2) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Checking PRG che	g of slider ck Control rod	Full-load s Setting po		Test spec	cifications (4)	ldle spec Setting p	point		cifications 5	Torque d		3
rev/min	travel		red travel	Central rad travel rnm 5	rev/min 6	rev/min 7	red travel rnm 8		Control rod travel mm	rev/min	Control rod travel mm 12	
650	15,6-16,4	650	16,0	10,2	1045-1060	300	5,8	100	min.7,5	1000	11,2-11,	3
1250	0 - 1			4,0	1090-1120			300 380-42	5,7-5,9 20 = 2,0			

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor of Test oil ten	elivery on ontrol lever np. 40°C (104°F)	Control rod stop	Fuel deliv	rery characteristics	Starting to	delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
1000	0,7 bar 207,0-211,0 (214,0-224,0)		LDA 700 LDA 400	0,7 bar 196,0-200,0 (193,0-203,0) 0 bar 119,0-123,0 (116,0-126,0)	100	230,0-240,0

Checking values in brackets

8.80

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. € 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany. Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

D. Adjustment Test for Manifold Pressure Compensator

SAU 12,0 a

-2-

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Setting	Measurement	diminution Control rod travel- difference
Gauge pressure = bar	Gauge pressure = bar	mm (1) .
0,7 bar		11,2 - 11,3
	0,38	11,1 - 11,2
		10,0 - 10,1
	0	9,7 - 9,8
	Gauge pressure = bar	Gauge pressure = bar Gauge pressure = bar  0,7 bar

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

**②** 

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 DAF 11,6 n 2. Adition

En

PE 6 P 110 A 320 RS 407

RQ 250/1100 PA 428/2R

supersedes

10,79

company:

DAF

Se Service Information I-DAF 004!

engine: 1160 (185kW-252PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke

(2.75-2.95

mm (from BDC)

Rotational speed rev/min 1	Control rod travel • mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,3-12,4	13,9 - 14,1	0,4(0,8)			
250	7,0-7,2	0,9 - 1,3	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

PRG che	Control rod	Full-load s Setting po rev/min 3	•	•	rev/min	Idle spec Setting p rev/min 7	Control red travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod (3	)
	15,6-16,4	700	16,0		1145-1160 1200-1230	250	7,1	100 250	mind.8,5	-	-	
1350	ŭ - 1,0								385=2,0 0 - 1			

Torque-control travel on flyweight assembly dimension a =

m

Speed regulation: At

1 mm less control rod travel

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics	Starting Idle spe	fuel delivery 6
rev/min 1	cm <sup>3</sup> /~1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min	rad travel
LDA	0,5 bar		LDA	0 bar	100	245,0-285,0
850	139,5-141,5 (136,5-144,5)		600	135,5-138,5 132,5-141,5)	250 (E	lectromagnet 24V

Checking values in brackets

8.81

C17

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. € 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

# D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

600

rev/min decreasing pressure - in bar gauge pressure

DAF 11,6 n

Pump/governor	Setting	Measurement		diminution Control rod travet- difference	
	Gauge pressure =	bar	Gauge pressure =	bar	mm (1) .
RS 407 -	0,7				12,3 - 12,4
PA 428/2R			0,3		12,1 - 12,2
			0		12,0 - 12,1
	L		<u> </u>		

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 3. Edition

5.75

PE 6 P 100 / 720 RS145, 202 RQV 250-1100 PA53,168 RS145Z

PA106

RS145, 202 RS145Z,202Z PA153, 167 PA153, 167

Scania company:

engine:

supersedes

**DS 11 A** 

Port closing test with/without ROBO diaphragm

All test specifications are valid for Boach Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,6 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	11,6 - 12,1	0,5			2,5±0,1**
600	9 12 15	3,7 - 4,9 9,5 - 10,9 15,0 - 16,8				(max.2,2-2,9)
200	9	2,4 - 3,4				

Adjust the fuel delivery from each outlet according to the values in \_\_\_\_\_\_.

In the case of greater dispersion alter the delivery-valve spring pre-tension

Governor Settings

RQV .. 58, 106, 153, 167

Upper rated	speed		Intermediat	e rated sp	eed	Lower rated	speed		Clidion	lance travel
Degree of deflection of control	rodtravel	mm Cave	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Silong a	loeve travel
lever	mm	rev/min (2	allever	rev/min	mm (4)	iover	rev/min	mm (3)	rev/min	mm .
1	2	3	4	5	6	7	8	9	10	11
ca.66	1100 1150 1200 1230 1310	14,0-16, 9,2-13, 3,6- 9, 0 - 7, 0	3   5			ca.10	210 270 370 430 570 650	5,7-8,0 3,4-6,0 2,2-3,8 1,4-2,7 0 -1,2	1100	8,4

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel delic high idle s	very characteristics 5a speed 5b	Starting Idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strakes	r <b>ev</b> /min	cm³/1000 strokes	rev/min	mm ····
1	2	3	4	5	6	7	8	9
LDA 1100 (14,5	0,5 bar 159,0-161,0 ± 0,5mmRW)	1120	LDA 600 LDA 500	0 bar	225 dispe	190 - 240 9 - 13 rsion max.1,	5)**	
(inc	rease by 1,0 (	m³)				39 - 44 ersion max.4)		./.

Checking values in brackets

\*4 mm less control rad travel then col. 2

SCA 11,0 i

Upper rated	speed			Intermediate	rated spe	ed	Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	(a) (2a)	Degree of deflection of control lever	rev/min 5		Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm 11
ca.66	1120 1200 1300 1410	15,0-17 9,2-13 1,0- 7 0	,6	-	-	-	ca.10	150 250 400 500	6,5-8,0 3,6-6,1 1,1-2,4 0	1120	8,3
							(3a)				

Torque control travel a =

mm

Ppe 145Z Ppe 202Z

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten rev/min 1		Rotational-speed ②b timitation intermediate speed rev/min 3	character high idle s	istics	idle switchir		Torque travel rev/min 8	Control (5)  Control rod travel mm
LDA 1100 (13,5	0,5 bar 144,0-146,0 ± 0,5 mmRW)	1120	LDA 500	0 bar 128,0-132,0	225 dispe 1200	190 - 240 9 - 13 rsion max.1,5 39 r44 ersion max.4)		

Checking values in brackets

\* 1 mm less control rod travel than co: 2

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure

Pump/gove	ernor	Setting	Measurement	Control rod travel-difference (1)
	•	Gauge pressure = bar	Gauge pressure = bar	mm (2)
145 202	- 58 - 168 )	0,26-0,28	0,14-0,17	-0,1 (1) -1,0 (1) ca.1,2 (2)
145 202	- 153 <sub>)</sub> - 167 <sup>)</sup>	0,40-0,44	0,24-0,28	-0,1 (1) -1,0 (1) ca.1,2 (2)
145Z	- 106	0,19-0,22	0,15-0,18	-0,1 (1) -0,4 (1) ca.0,6 (2)
145Z 202Z	- 153 - 167)	0,19-0,21	0,14-0,16	-0,1 (1) -0,4 (1) ca.0,6 (2)

En

Testoil-ISO 4113

estoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 SCA 11,0 p
6. Edition

En

PE 6 P 110 A 720 RS 3017 RS 3014

RQV 200-100 PA 283KR EP/RSV 350-1100 P 1/310R./. supersedes 2.76

company: Scania

engine: DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Tasters

#### A. Fuel Injection Pump Settings

Port closing at prestroke

3,3 + 0,1

mm (from BDC)

 $\binom{+0,15}{-0.05}$ 

			,		-0.05	
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel	Fuel delivery  cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,5-14,1	0,5			2,5 + 0,1 (max.2,2-2,9)**
600	15	19,7-21,4				(max.2,2-2,9)**
200	9	4,2-5,2				

Adjust the fuel delivery from each outlet according to the values in

In the case of greater dispersion alter the delivery-valve spring pre-tension

#### **B.** Governor Settings

RQV .. 283KR

deflection of control	ev/min Control od travel	Control rod travel mm rev/min 28	Intermediate Degree of deflection of control lever	rev/min	Control rod travel	Lower rated Degree of deflection of control lever	rev/min	Control rod travel	rev/min	leave travel
	1130 1200 1250 1310 1410	15,0-17,0 9,2-13,6 5,3-10,8 0 - 7 0	-	5 •	6	ca.13	90 180 270 300 400 500	7,4-8,0 5,8-8,0 2,8-5,4 2,3-4,2 1,3-2,3	500	0,2-1,3 3,8-4,4 6,2-6,6 8,3

Torque control travel a =

mr

- Section C, col. 8

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed			Starting idle switching		Torque- travel	Control rod
rev/min 1	cm <sup>3</sup> /1000 strokes .	rev/min 4a)	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min	travel mm: ****
LDA 850	0,7 bar 156,0-158,0	1135-1145*	LDA 1100 LDA 500	0 bar d 133,0-137,u	225 isper 1200	190 - 240 9 - 13** sion max. 2 25,5-35,5 sion max.4	850	13,5 12,7 12,8 12,9

Chucking values in brackets

10.76 mm less sentrol rad travel then col. 2

# **B.** Governor Settings

**EP/RSV** .. 310R

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min  Control rod  travel  mm rev/min  3	Interme			Control- lever deflection in degrees 7	Low rev/min 8	Control rod travel mm	3 To	rque control Control rod travel mm
ca.67	1100 1150 1200	16,0 11,7 6,0	with auxi	out liary	spring	ca.31	350 100 350	6,0 19 - 21 5,7-6,3		
<b>②</b>	1150 1200 1350	10,4-12,5 4,4- 7,8 0,3- 1,0	with auxi	liary	spring		400 550	3,2-4,7 0 - 1		

# C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	6 Rotational- speed limitat.	30 Fu	lel delivery paracteristics	Starting f	uel delivery 5	4e Idle stop	
	cm <sup>3</sup> /1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
1100	161,0-163,0	1135-1145*	600	162,5-165,5	100 350 dispe	190-240 10- 14)** rsion max. (4)		
			1200 dispe	28,0- 33,0 rsion max.4)				

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

# D. .. djustment Test for Manifold Pressure Compensator

Test at n = 850 rev/min decreasing pressure - in bar gauge pressure XXXXXXXX

Pump/governor	Setting	Management	diminution
rump/governor	Setting	Measurement	diminution Control rod travel-
		_	difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
3017 - 283KR	0,40 - 0,42		0,1.
3017 ZOOM		0,20 - 0,24	1,0
		0,20 - 0,24	,,0

Notes:

(1) when n =

1100 rev/min and gauge pressure = 0,7

bar (= maximum full-load control rod travel)

En

1

festoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

VDT-WPP 001/4 SCA 8.0 c 1. Edition

PE 6 P 110 A 720 RS 3012 PE 6 P 110 A 720 RS 3013 RQV 200-1200 PA 275 EP/RSV 350-1200 P1/310 supersedes

company: engine:

Scania DS 8

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12	11,5 - 12,0	0,6		·	2,5 ± 0,1**
600	15	15,9 - 17,4				(max.2,2-2,9)
200	9	2,3 - 3,3				
** In t	e case ordinaly.	f greater disp	rsion alt	er the d		pring pre-tension

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

**RQV** .. 275

Upper rated	speed		Intermediat	e rated sp	eed	Lower rated	speed		Sliding s	leeve travel
deflection of control	rev/min Control rod travel	mm .	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever	WLL3	rev/min (2	e) lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1240 1300 1430 1590	15,0-17, 11,3-14, 2,2- 8,	9		-		100 250 400 530	6,4-8,0 3,9-6,0 1,7-3,2	300 600 240	1,6-2,4 4,3-4,6 8,2
						<b>3a</b>			-	-

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel delic high idle s	very characteristics 5e poed 50	Starting idle switchis		Torque- travel	control 6
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1200	0,7 bar 115,0-117,0	1245~1255*	LDA 600 LDA 500	0,7 bar 113,5-116,5 0 bar 81,0- 85,0	225	190,0-240,0 <u>9,</u> 0- 13,0 ersion max.1,		
(incr	ease by 2,0 cr	1 <sup>3</sup> )		·	1220 disp	36,5 -46,5 ersion max.4)		./،

Checking values in brackets

\*1 mm less control rad travel than cel. 2

The numbers denote the sequence of the tests

SCA 8,0 c

# **B. Governor Settings**

EP/RSV ... P1/310

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated		Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
ca.71	1200 1250 1300	16,0 11,9 6,3	with auxi	out liary	sprin	ca.31	350 100 350	6,0 19 - 21 5,7-6,3		
2	1250 1320 1420	10,8-12,4 2,4-6,0 0 - 1	with auxi	i liary	sprin	g	400 520	5,7-6,3 3,3-4,5 0 - 1		

# C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	6 Rotational- speed limitat.		rel delivery paracteristics	Starting t	uel delivery 5	4e idle stop	
Test oil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rey/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm
1200	115,0-117,0	1230-1240*	600	113,5-116,5	1300	190,0-240,0 9 - 13 rsion max.1 :6 nmRW rsion max.4	,5)**	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# **Adjustment Test for Manifold Pressure Compensator**

Test at n =

Testoil-ISO 4113

rev/min increasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm (1)
3012 - 275	0,40 - 0,42	0,20 - 0,24	- 0,1 - 1,1

Notes:

(1) when n =

600 rev/min and gauge pressure =

7 bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

WPP 001/4
3. Edition

PE 6 P 120 A 320 RS348

RQV 250-1200 PA321R EP/RSV 300-1200 P2/408R supersedes\_

company: Berliet

engine: MIDS 062 030

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at prestroke (2,75–2,95) mm (from BDC

		(=)/0 = 500/				
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,3	17,6 - 18,0	0,4(0,8)			
250 500/300	+0,1 4,7-4,9 	1,1 - 2,0 C, 4-5 -	0,4(0,7) 0,6(1,0			

Adjust the fuel delivery from each outlet according to the values in

# **B.** Governor Settings

Upper rated s	peed		Intermediat	e rated ap	eed	Lower rated	speed			
Degree of deflection of control lever		Control rod travel mm rev/min 2	of control	rev/min 5	Control red travel mm 4	Degree of deflection of control lever	rev/min	Control red travel mm 3	rev/min	mm
ca.68	1200 1480	15,2-17,8 0 - 1	8.			ca.15	100 250	min.7,3 4,7-4,9 55 = 2,0	250	0,4-1,5
ca.65	11,3 4,0	1240-1250 1320-1350					800	0 - 1	600 1130	2,9 <b>-</b> 3,6 8,3
						<b>3</b>	-		-	

Torque control travel a =

mar

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten	elivery d stop np. 40°C (104°F) 2	Rotational-speed 2b limitation intermediate speed	Fuel delin	very characteristics (5a)	Starting Idle switchli		Torque- travel	Control roo
rev/min 1	cm <sup>3</sup> /1000 strokes .	rev/min 4a	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	travel mm
LDA 1200	0,45 bar 176,0-180,0 (173,0-183,0)	1240-1250*	LDA 500 LDA 350	0,45 bar 91,0-97,0 (88,0-100,0) 0 bar 54,0-58,0 (51,0-61,0)	100 250 100- (80-1	11,5- 19,5		./.

Checking values in brackets

7 imm less central rad travel then cal. 2

9.78

BOSCH

Beschäftsbereich KM. Kundendienet. Kfz-Ausrüstung. Diby Robert Bosch Gmoht. D-7 Stuttgert 1, Postfach SQ. Printed in the Federal Republic of German; mprime en Aépublique Fédérale d'Allemagne per Robert Bosch GmbH.

# **B.** Governor Settings

Degree of deflection of control laver	r rated speed Control rod travel mm	rev/min  Control rod  travel  mm rev/min  3	Interme	ediate rate		Control- lever deflection in degrees 7	Low rev/min 8	Control rod travel mm	3 To	Control rod travel
ca.50	1150	16,0				ca.21	300	4,8		
29	1250 1340 1250 1350 1500	10,8 4,8 10,4-11,2 3,6- 5,1 0,3- 1,0	with	iliary	·		150 300 450 640	19 - 21 4,5-5,1 2,0-3,4 0 - 1		

# Testoil-ISO 4113

# C. Settings for Fuel Injection Pump with Fitted Governor

li-load stop Imp. 40°C (104°F)				Starting (	ruel delivery 5	4a idle stop	
cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	١.	Control rod travel mm
age 1	1240-1250*						
	mp. 40°C (104°F) cm³/1000 strokes 2	mp. 40°C (104°F)  cm³/1000 strokes  2  speed limitat.  Note: changed to) rev/min 3	mp. 40°C (104°F) cm³/1000 strokes 2  speed limitat. Note: changed to) rev/min 3	speed limitat. Note: changed to) rev/min grey/min gre	mp. 40°C (104°F) cm³/1000 strokes 2  speed limitat. Note: changed to) rev/min rev/min 3  characteristics lidle rev/min cm³/1000 strokes feet/min 6	mp. 40°C (104°F) cm³/1000 strokes 2  speed limitat. Note: changed to) rev/min rev/min 3  rev/min cm³/1000 strokes 7	mp. 40°C (104°F) cm³/1000 strokes 2  speed limitat. Note: changed to) rev/min 3  characteristics lidle lidle rev/min cm³/1000 strokes 7  ldle rev/min cm³/1000 strokes 7

Checking values in brackets

\* 1 mm less control rod travel than col. 2

# . Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	difference mm (1)
348 - 321 R 348 - 408 R <sup>)</sup>	0,41	0,20 . 0,17 0	12,3 - 12,4 11,8 - 11,9 11,3 - 11,5 11,0 - 11,1

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 1. Edition

E

PE 6 P 100 A 720 RS 414

RSV250-1175 P1/473

supersedes company

FBW

engine

Cu 6 A

1 - 5 - 3 - 6 - 2 - 4 0 - 60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90

mm (from BDC) RW 10,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1175	12,4	12,6-13,0	0,5(0,8)			
250 600 600	+0,1 8,3-8,5 	c, Sp 4-5 c, Sp.4-5	0,8(1,2) 0,7(1,0) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

# **B. Governor Settings**

Decree of	r rated speed Control rod travel mm		Intermed	liate rated	speed	Control- lever deflection in degrees		rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800	0,3-1,0			<u> </u>	ca.22	250 250 495-55	8,4 8,8-9,0 5 = 2,0		
ca.61		225 =11,4 320 = 4,0 3,3-1,7								

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b</b> Full-load stop		6 Rotational- speed limitat		Fuel delivery characteristics		Starting fuel delivery 5		idle stop	
rev/min	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to ) rev/min 3	rev/min	cm\$1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm	
LDA 1175	0,7 bar 126,0-130,0 (123,0-133,0)		LDA 600	0,7 bar 119,0-123,0 (116,0-126,0)	100	150,0-170,0	250	8,9	

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.80

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung c. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

Testoil-ISO 4113

Test at n

500

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting		Measurement		diminution Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure =	bar	mm (1) .
414 ~ 473	0,7 bar				12,5 - 12,6
			0,35		12,4 - 12,5
			0,25		12,0 - 12,1
			0		11,6 - 11,7
					·

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control re \* 'ravel)

### Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 PEN 7,0 d
1. Edition

Εn

(1)

PE 6 P 110 A 320 RS 374

RSV 200-1200 P 1/305R 200-1000 supersedes Volvo-Penta

engine

TMD 70 C (1) MD 70 G (2)

Setting values for the governor

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strakes 4	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1200	10,5	9,1 - 9,3	0,4(0,8)	10,5	9,3 - 9,5	n = 1000
200	+0,1 8,6-8,7	1,7 - 2,7	0,4(0,7)	+0,1 8,6-8,7	1,7 - 2,7	2,5±0,1** (max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Testoil-ISO 4113

200-1200 (1)

Degree of deflection of control lever	r rated speed  Control rod  travel  mm  2	Control rod travel mm rev/min	Intermed	trate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control  Control rod  travel  mm
loose	800 x =	0,3-1,0 5,2				ca.26	200 100 200	8,1 min.20		
ca.68	9,5 4,0 1400	1240-1250 1295-1325 0,3- 1,7					390-46 550	8,6-8,7 D =2,0 O-1		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp. 40°C (104°F)	Rotational- speed limitat Note: changed to		el delivery aracteristics	Starting tidle	uel delivery 5	4a idi	e stop
rev/min	cm <sup>9</sup> /1000 strokes	rev/min	rev/min	cm3/1000 strokes	rev/min	cm#1000 strckes	rev/min	travel mm
<u> </u>	2	3	4	5	6	T	8	9
1200	91,0 - 93,0 (88,0 - 96,0)	1240-1250*		dis	1310	19,0-29,0 4,0-4,1mm n max.4 (9	RW )	

Checking values in brackets

\* 1 mm less control rod travel than col 2

5.79

BOSCH

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung r. 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprimé en République Federale d'Allemagne par Robert Bosch GmbH.

#### **B.** Governor Settings

20	<b>n</b> -	10	กก
20	U-	IV	UU

Decree	r rated speed Control rod travet mm	rev/min Control rod travel mm rev/min	Intermed	iate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	1 ( 0 )	rque control Control rod travel mm
100se	800 x	0,3-1,0 = 4,3				ca.22	200	8,1 min.20		
ca.53	9,5 4,0 1200	1040-1050 1095-1125 0,3-1,7					200 390-45 550	8,6-8,7		

# Testoil-ISO 4113

#### C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop	6 Rotational- speed limitat.	Sa Fuel delivery characteristics		Starting f	uel delivery 5	idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	93,0-95,0 (90,0-98,0)	1040-1050*					R₩ (9)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min	Interme	ediate rated	speed	Control- lever deflection in degrees 7	rev/min	r rated speed   Control rod travel mm	3 To	rque control Control rod travel mm
29										

#### C. Settings for Fuel Injection Pump with Fitted Governor

	II-load stop emp. 40°C (104°F)	Rotational- speed limitat. Note: changed to)	3a) Fu	el delivery aracteristics	Starting f	uel delivery 5		e stop Control rod travel
rev/min 1	cm <sup>3</sup> /1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
				•				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 1. Edition

PES 6 P 110 A 720 RS337

EP/RSV 400-1050 P 0/416DR

supersedes =

John Deere 6619 T

dimension H = 28,0 mm

**Testoil-ISO 4113** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,80-2,90 Port closing at prestroke (2,75-2,95)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm¥100 strokes 3	cm³/ 100 strokes 4	mm 2	cm³/100 strokes	mm 6
1050	10,2	13,5 - 13,7	0,4			
400	6	2,1 - 2,7	0,4			
Port clo	sing mark c	<b>v1. 1 :</b> 14° af	ter port c	losing		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	Control rod travel mm		Interme	ediate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed  Control rod  travel  mm	3 To	rque control  Control rod  travel  mm
ca.39	1050 1100 1150	15,6-16,2 8,4-10,8 3,6- 5,6	with	out au	xiliar	ca.20 y spring	400 100 400	6,8 19 - 21 6,8	1050 750 630	0
28	1200 1250	0,3- 2,9 0,3- 1,5	with	auxil	iary s	pring	520 <b>-</b> 580	2	030	0,5

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>W</b>	ull-load stop	6 Rotational- speed limitat		iel delivery iai acteristics	Starting t	tuel delivery 5		
rev/min 1	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes 2 <u>±</u> 2	Note. changed to .) rev/min 3	revimin 4	cm³/1000 strokes	rev/min	cm\$/1000 strokes	rev/min	Control rod travel mm
LDA 1050	1,0 bar 135-137	1095-1105 (1090-1110)	1150	45 - 55	100	min 190	400	21,0-27
630 550	145-149 114-122						cm <sup>3</sup> /	000 Stro

Checking values in brackets

\* 1 mm less control rod travel than col 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure XXXXXX

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm (1)
Manifold-pressure compensator setting	0,68-0,72	0,16-0,24	
Switching point	max. 0,76	min. 0,48	

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

unlocking n=350-450/min

estoil-ISO 4113

WPP 001/4 SCA 11.0 k 2 1. Edition

<del>SCA 11,0 k (7,71)</del>

PE 6 P 90/720 RS 147, 206 EP/MZ 80 P 3 R

RS 149, 205 EP/MZ 80 P 4 R

Port-closing test with/without ROBO diaphragm |

supersedes Scania company

D 11 engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2.6 + 0.1

mm (from BDC)  $\begin{pmatrix} +0,15 \\ -0,05 \end{pmatrix}$ 

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	8,5 - 9,2	0,4			$2,5\pm0,1*$
600	9 12 15	2,9 - 3,9 7,4 - 8,4 12,2 -13,5				(max.2,2-2,9)
200	9	1,8 - 2,8				

Adjust the fuel delivery from each outlet according to the values in the case of greater dispersion alter the delivery-valve spring pre-tension B: Governor Settings

			1-				•	EP/MZ 3	K. 4R	
	Leakage		Control limitation breaka		Control	rod travel test	Auxiliary auxiliary		Torque control	
	Vacuum pressure drop			Control rod travel	Vacuum Control rod travel		Vacuum   Control rod travel		Vacuum	Control rod travel
mm	mm water col.	s	mmw.c.	mm	mmwc.	mm	mmwc.	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
<ul> <li>rotational speadjust breakay</li> </ul>	2000 - 1700 rel test (cols. 4- eed 500 rev/mir ray (cols. 4-5) to at (8 8-9 - C 7-1	n. Ov means	s of shims	S*	835 870 400 440 480	3,5-14,5 7,8-11,4 4,4-6,6 3,7-6,0 3,0-5,3	415	4,1-6,3	-	-

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Full-load stop screw Test oil temp. 40°C (104°F)			very character	ristics	idle (sto) idle (imb		Control road trave from full-load to
rev/min 1	Vacuum mm wat col 2	cm <sup>3</sup> /1000 strokes 3	rev/min 4	Vacuum mm wat col 5	cm <sup>3</sup> /1000 strokes	rev/min 7	Vacuum mm wat col	idle mm cm <sup>3</sup> /1000 strokes 8
1080	0	142,0-144,0 (140,0-146,0)	600	0	135,0-139,0 (133,0-141,0)	1200	rsion max	16-22

Checking values in brackets

2

Testoil-ISO 411

## Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 11,6s 1
1. Edition

En

PE 6 P 100 A 320 RS 384 Z RQ 250/1100 PA 574

supersedes

company: DAF

engine:

**DKL 1160** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

3.2 - 3.3

mm (from BDC)

RW 9 mm FB Diff. 9 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11.5	10.9 - 11.2	0,5			
1050	+0,1 10,8-11,1	10,6 - 11,1				
225	7,2-7,4	1,0 - 1,4	0,3			
						_

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1	PRG che	g of slider ck Control rod	Full-load s Setting po	int	Test specifications (4)		Idle speed regulation Setting point Test specifications  5				Torque control		
		travel	rev/min 3	Centrel red travel mm 4	Control not travel norm 5	rev/min 6		red travel mm 8	rev/min 9	Control rod travel mm		Control rod travel mm	
	700	15,6-16,4	700	16,0	10,8	1140-1155	225	7,3	100	min.7,5			
ı	1400	0 - 1			4,0	1175-1205			225 325-	7,2-7,4 365=2,0			
	1700	J = 1							600	0 - 1			

Torque control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	uel delivery d
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:// mm 7
1050	106,5-111,5 (104,0-114,0)		600	109,5-112,5 (108,0-113,0)	100	21,5 19,5-21,0 RW
					225	7,2

Checking values in brackets

11.80

**BOSCH** 

Testoil-ISO 4113

#### **Test Specifications** Fuel Injection Pumps (2) and Governors

WPP 001/4 DAF 11,6 s 2 1, Edition

PE 6 P 100 A 320 RS 384 y

RQ 300/1100 PA 574

supersedes

company:

DAF

engine:

DKL 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

3.2 - 3.3

mm (from BDC)

RW 9 mm FB.Diff 9 mm RW

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
600	11,5	10,9-11,2	0,5			
	+0,1					
1050	10,8-11,1	10,6-11,1				
225	7,2-7,4	1,0-1,4	0,3			
•						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Chec PRG rev/n	che	ck Con trav	itrol		, (	1	Full-load s Setting po rev/min 3	Control red travel red travel mm rev/min 4 5 6			4)	Setting p	Idle speed regulation  Setting point Control red travel rev/min 7  Control rev/min 8  Control rod travel rev/min 9			Torque o	Control rod	3)
7	00	1	5,	6-	16	5,4	700	16,0	10,9	1140-1	155	225	7,3	1	min.7,5 7,2-7,4			
14	00		0	-	1				4,0	1175-1	205			325-3 600	65=2,0 0 - 1			

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting fuel delivery Idle speed		
v/minبر. 1	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	Control rad travel cm <sup>3</sup> /1000 strokes;/ mm	
1050	106,5-111,5 (104,0-114,0)		600	109,5 - 112,5 (108,0 - 114,0)	100	21,5 19,5-21,0 RW	
					225	7,2	

Checking values in hrackets

11.80

#### **Test Specifications** Fuel Injection Pumps (A) and Governors

VDT-WPP 001/4 2. Edition

PES 6 P 100 A 720 RS 1010

EP/RSV 400-1050 P2/411D

supersedes

John Deere

P2/412D P7/413D

company engine.

6531

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,4. + 0,1

estoil-ISO 4113

mm (from BDC) (\_0.05)

				, -0,05		
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Difference cm²/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12	12,7 - 13,4	0,5			
600	9 12 15	5,6 - 6,8 11,6 - 13,2 17,2 - 19,0				
200	9	4,0 - 5,2	[ 			

Adjust the fuel delivery from each outlet according to the values in E

**B. Governor Settings** 

EP/RSV .. P2/411D

Degree of deflection of control lever	Control rod travel mm	travel travel mm rev/min 2 3 1040 16,0				Control- lever deflection in degrees 7	Lowe rev/min 8	Control rod travel mm	3 To	Control rod travel
ca.38	1040 1080 1220	16,0 11,5 4,6	with auxi	without auxiliary sprin			400 200	7,2 19 - 21	1050	0
29	1155	ca.11,0 ca. 4,7 0,3-1,0	with				400 550 780	6,9-7,5 3,2-5,1 0 - 1	500	0,6-0,8 0,8-1,0

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

		T		- P total i itte				
	emp. 40°C (104°F)	Rotational- speed limitat		uel delivery naractenstics	Starting fuel delivery 5 4a idle sto			e stop
rev/min 1	cm³/1000 strokes 2	changed to .) rev/min 3	rev/min	cm³/1000 strokes	rev/min	cm <sup>4</sup> 1000 strokes	rev/min	Control rod travel mm
LDA 1050	0,9 bar 142,0-144,0 (140,0-146,0)	1085-1095*	LDA	0,9 bar 156,0-160,0 (154,0-162,0) 0 bar	400 1155	21,0-27,0 (19,0-29,0) 24.0-44.0 (22,0-46,0)		9
			500	108,0-116,0 (106,0-118,0)				

Checking values in brackets

\* 1 mm less control rod travel than col 2

1.77

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#### EP/RSV .. P2/412D

1	r rated speed Control rod travel	lever deflec			Control- lever deflection	- Lowe	rated speed Control rod travel	3 To	rque control Control rod travel mm	
lever 1	2	mm rev/min 3	4	5	8 ·	in degrees 7	8	9	10	11
ca.38	1040	16,0		4		ca.17	400	7,2		
	1080 1120	11,2 5,2	with auxi	il iary	sprin	9	200 400	19 - 21 6,9-7,5	1050 800	0 0,6-0,8
29	1050 1100 1280	ca.10,6 ca. 4,7 0,3-1,0	with auxi	ı iliary	sprin	9	550 780	3,3-5,1 0 - 1	500	0,8-1,0

#### C. Settings for Fuel Injection Pump with Fitted Governor

<b>2b)</b> F(	ili-load stop	Rotational- speed timitat.	Rotational- speed limitat. 3a Fuel delivery characteristics			Starting fuel delivery 5 4a Idle stop		
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1		Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm 9
LDA 1050	1,0 bar 151,0-153,0	1085-1095*	LDA 750	1,0 bar 163,0-167,0 (161.0-169,0)	400	21,0-27,0		
			LDA	0 bar	1155	24,0-44,0 (22,0-46,0)		
			500	108,0-116,0 (106,0-118,0)				

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

EP/RSV .. P7/413D

1 Uppe	er rated speed	l rev/min	Interm	ediate rate	d speed	4	Low	er rated speed	(3) To	rque control
Degree of deflection of control lever	Control red travel mm	Control rod travel mm rev/min 3	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min	Control rod travel mm
ca.66	1040 1080 1110	16,0 9,0 3,2	with auxi	out liary	spring	ca.28	400 150 400	7,0 19 - 21 6,7-7,3	1040	0
20	1110	ca.13,2 ca. 5,2 0,3-1,0	with auxi	l liary	spring		500 660	3,2-5,9 0 - 1	500	0,7-0,9

#### C. Settings for Fuel Injection Pump with Fitted Governor

2b Fu	II-load stop	6 Rotational- speed limitat. 30 Fuel delivery characteristics			Idle			e stop
Test oil te rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	151,0-153,0	1065-1075*	750	163,0-167,0	400 1115	21,0-27,0 4,5-5,5mm	RW	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Ppe 1010

-3-

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

	ii la dasiii y		
ump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
1010 + 411D	0,55	0,20	0,1 - 0,3 mm 1,8 - 2,0 mm
1010 + 412D	0,63	0,20	0,1 - 0,3 mm 2,2 - 2,4 mm
hydraulic	Locking at	Unlocking at	
1010 + 411D	max. 0,76	min. 0,45	
1010 + 412D	max. 0,76	min. 0,48	

Notes:

(1) when n =

750 rev/min and gauge pressure = 1,0

bar (= maximum full-load control rod travel)

Preliminary adjustment, dimension H - 411D = 32,8 mm - 412D = 33,3 mm

Testoil-ISO 411

#### Test Specifications Fuel Injection Pumps ① and Governors

Wpp 001/4 VCL 7.0 e 5. Edition

PE 6 P 110 A 320 RS 367

RQV 250-1200 PA394/2R (1)

4.79

RS 367Z

PA394/2R (2)

Volvo company: TD 70 F

**RS 367Y** 

PA394/2R (3)

engine: IU / 1-174kW-237PS)

(2-155kW-210PS) (3-180kW-245PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

roke	(2,95-3,15)	mm (from BDC)			
		Cifference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
11,9	12,1 - 12,3	0,4(0,8)		10,0 - 10,2	2,5± 0,1** (max.2,2-2,9)
4,7-4,8		0,4(0,6) 0,6(1,0)		0,9 - 1,3	
- (1	Control rod travel mm 2 11,9 + 0,1	Control rod ravel  mm cm <sup>3</sup> /100 strokes 3  11,9 12,1 - 12,3 + 0,1 4,7-4,8 0,9 - 1,3	Control rod ravel  mm cm³/100 strokes  11,9 12,1 - 12,3 0,4(0,8)  + 0,1  4,7-4,8 0,9 - 1,3 0,4(0,6)	Control rod ravel  mm cm³/100 strokes 3  11,9 12,1 - 12,3 0,4(0,8) 10,9 + 0,1 4,7-4,8 0,9 - 1,3 0,4(0,6) 4,7-4,8	Control rod ravel  mm cm³/100 strokes 3  11,9 12,1 - 12,3 0,4(0,8) 10,9 10,0 - 10,2 + 0,1 4,7-4,8 0,9 - 1,3 0,4(0,6) 4,7-4,8 0,9 - 1,3

just the fuel delivery from each outlet according to the values in In the case of greater dispersion alter the delivery-valve spring pre-tension

Governor Settings

peed		Intermediate	rated sp	eed	Lower rated	speed	Glidigo e	leeve travel	
Control		1 gallaction		Control rod travel	Degree of deflection		Control rod travel	Sliding sleeve travel	
	mm rev/min (2	lever	rev/min	mm (4)	lever	rev/min	mm (3)	rev/min	mm
2	3	4	5	6	7	8	9	10	11
1200 1500	15,2-17,8 0 - 1				ca.12	100 250	min.6,3 4,7-4,9	200	0,3-1,2
								1230	8,2
10,9 4,0					<b>®</b>	000	U-1		
	rev/min Control rod travel mm 2 1200 1500	rev/min Control rod travel rod travel mm rev/min 3  1200 15,2-17,8 1500 0 - 1	rev/min Control rod Travel rod travel mm rev/min 2	rev/min Control rod travel rod travel rod travel rod travel rom rev/min 2	rev/min Control rod (a) Degree of deflection of control rev/min 2	rev/min Control rod travel rod travel rod travel rod travel rev/min 2	Control rod travel   Control	Control rod travel   Control	Control rod travel   Control

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		04°F) 2 limitation intermediate speed		very characteristics (5a)	Starting Idle switchin		Torque- travei	control 5
rev/min	cm³/1000 strokes .	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	travel mm ···
1	2	3	4	5	6	7	8	9
(1) 700	LDA 0,7 bar 121,0-123,0 (118,0-126,0)	1260-1270*	LDA 700	0 bar 78,5-80,5 (75,5-83,5) di	100 250 spers	165 - 200 11-15 ion.max.3 <sup>)**</sup>	,	

Chucking values in brackets

\*1 mm less control rad travel than cel. 2 4.80

#### **B.** Governor Settings

367Z (	2)
--------	----

VOL	7,0	е
I OL	,,,	_

Upper rated a	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding	eeve travel
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min		Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	1
1	2	3	9	4	5	6	7	8	9	10	11
ca.68	1200 1450	15,2-17 0 - 1	7,8	-	-	-	ca.12	100 250	min.6,5 4,7-4,8	200	0,3-1,2
	<del> </del>									1230	8,2
ca.67	9,9	1265-12 1360-13						600	0-1		
							<b>3a</b>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten	a stop	Rotational-speed (22) Ilmitation intermediate speed	Fuel deln high idle s	peed 50	Starting Idle switchir		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm3/1000 strokes	rev/min	travel mm
700	LDA 0,6 bar 100,0-102,0 (97,0-105,0)	1265-1275*	LDA 700	0 bar 78,5-80,5 (75,5-83,5)	100 250 disp	165-200 11- 15 ersion max.3	)**	

Check

alues in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

#### 367Y (3)

Upper rated s	peed		Intermed	ate rated spe	ed	Lower rated	speed		Sliding s	eeve travel
Degree of deflection		tiare.	Degree of deflection	1	Control rod travel	Degree of deflection	ı	Control rod travel		①
of control lever	rod travel mm	rev/min (	of control lever	rev/mเก	mm 4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1200 1450	15,2-17, 0 - 1	8			ca.12	100 250	min.6,3 4,7-4,8		
ca.68	11,3 4,0	1240-125 1322-139				<b>3</b> a)				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load di Control-roc Test oil ten rev/min	cm <sup>3</sup> /1000 strokes	Rotational-speed (2b) Ilimitation Intermediate speed rev/min	Fuel detin high idle s rev/min	very characteristics 5a speed 5b cm³/1000 strokes		fuel delivery 6 ng point cm <sup>4</sup> /1000 strokes	Torque- travel rev/min	Control od travel mm
LDA 700	0,7 129,0-131,0 (126,0-134,0		LDA 700	0 bar 78,5-80,5 (75,5-83,5)	100 250 disp	165,0-200,0 11-15** ersion max.3		

Checking values in brackets

\* 1 mm less control rod travel than col 2

VOL 7,0e

-2-

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

Pump/go	overnor		Setting	Measurement	diminution Control rod travel- difference
			Gauge pressure = ba	Gauge pressure = bar	mm (1) .
367	_ 3	94/2R	0,48	0,27	11,5 - 11,6 10,3 - 10,5
367	_ 3	94/2R	0,37	0,24	10,6 - 10,7 9,9 - 10,1
367	_ 3	94/2R	0,53	0,26	11,8 - 11,9 10,3 - 10,5

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

estoil-ISO 4113

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4

3. Edition

PE6P110A720RS 368

RS 380

RQV 250-1050 PA 240 R (1) 250-1100 PA 434 R (2)

250-1100 PA 503

supersedes company:

6.79 Chrysler

**BSS36** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	troke	(2.75-2.95)	mm (from BDC)			
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Sprin() pre-tensioning (torque-control valve) mm 6
1050	14,5-14,5	16,6-16,8	0,4(0,8)	15,5-15,6	18,6-18,8	n = 1100
250 1050/1100	8 <b>,7-</b> 8 <b>,</b> 9	2,2- 2,8 C, 4-5	0,4(0,7) 0,6(1,0)		2,2- 2,8	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

240 R (1)

Upper rated s	speed		Intermediate	rated sp	ed	Lower rated	speed		Sliding s	iesve travel
	rev/min Control rod travel mm	Control rod travel mm rev/min 2s	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm 11
ca.68	1050 1400	15,2-17,8 0 - 1	-	-		ca.13	100 250 490-	min.10,3 8,7-8,9 555= 2,0		1,1 4,0-4,2 7,6
ca.62	13,5 4,0	1090-1100 1230-1260				350-500 3	700	0 - 1		

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) limitation intermediate speed	Fuel delivery characteristics (5a)		Starting Idle switchir	•	Torque- travel	Control rod	
rev/min	cm³/1000 strokes .	rev/min 48	rev/min	crn <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm	
1	2	3	4	5	8	7	8	9	
LDA 1050	0,7 bar 166,0-168,0 (163,0-171,0)	1090-1100*	LDA 1050	0 bar 127,0-131,0 (124,0-134,0		19,5-21,0			
						<b>*</b>		./.	

Checking values in brackets

\*.1 mm isses control rad traval then col. 2

①

**B.** Governor Settings

deflection	peed rey/min Control rod travel mm	Control rod travel mm rev/min	(19)		rated spe	Control rod travel	Lower rated Degree of deflection of control lever	speed rev/min 8	Control rod travel mm 3	Sliding sl rev/min 10	mm
ca.68	1180 1400 14,5	15,2-17 0 - 1 1140-11 1290-13	 50	•	•	-	ca.18	100 250 470- 750 340-	min.10,1 8,5-8,7 530= 2,0 0 - 1 460		1,6-1,8 5,4-5,6 8,2
							(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten		limitation intermediate speed	Fuel deliv character high idle s	ristics	Starting Idle switchin	fuel delivery 6	Torque-d travel	Control (5) Control roc travel
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1100	0,9 bar 186,0-188,0 (183,0-191,0)		LDA 1100	0 bar 134,0-138,0 (131,0-141,0				

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

fev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm
368 - 240 R	. 0,68	0,50 0,36 0	14,5 - 14,6 14,0 - 14,1 12,9 - 13,2 12,6 - 12,7
380 - 434 R	0,90	0,68 0,48 0	15,5 - 15,6 15,0 - 15,1 13,7 - 13,9 13,2 - 13,3

1.80

1	B. Gov	ernor	Settin	gs
	Upper rated		1	
1		and anim	Control	

Upper rated s	peed		Interme	diate rated spe	eed	Lower rated	speed		Sliding sl	eeve travel
deflection of control	rev/min Control rod travel mm	mm	Degree deflecti of contr lever	on	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	1) mm 11
ca.68	1180 1400	15,2-17, 0 - 1	8 -	•	-	ca.18	100 250			
ca.65		1140-115 1280-132	Į.					-560 =2,0 -460		
						(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem rev/min	stop p. 40°C (104°F) 2	Rotational-speed 2b firmitation intermediate speed rev/min 3	character high idle s	istics $\stackrel{\textstyle \sim}{\sim}$	idle switchin	uel delivery 6 g point cm²/1000 strokes 7	Torque- travel rev/min i 8	Control 5 Control rod travel mm
LDA 1100	0,9 bar 186,0-188,0 (183,0-191,0)	1140-1150	LDA 1100	0 bar 134,0-138,0 (131,0-141,0		(80)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

revirain decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure bar	mm
380 - 503	0,90		15,5 - 15,6
		0,68	15,0 - 15,1
		0,475	13,5 - 13,7
		0	12,9 - 13,0

En

1.80

estoil-ISO 4113

# Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 SCA 11,0n
3. Edition

En

PE 6 P 110 A 720 RS 3005

RS 3005 RS 3005 RQV 250-1100 PA 183 R RQV 250-1100 PA 229R EP/RSV 350-1100 P1/310 R supersedes 11.74 Scania

engine:

Z..1 See page 3!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

+0,15

Port closing at prestroke

3,3 + 0,1

mm (from BDC)

-0.05

rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,4 - 13,0				2,5±0,1**
600	9 12 15	5,8 - 6,8 11,9 - 13,2 17,1 - 18,6				(max.2,2-2,9)
200	9	3,4 - 4,3			:	

Adjust the fuel delivery from each outlet according to the values in

In the case of greater dispersion alter the delivery-valve spring pre-t sion

**B. Governor Settings** 

RQV ... 183

deflection	i .	Control rod	•	Intermediate Degree of deflection	rated spe	ced Control rod travel	Lower rated Degree of deflection	speed	Control rod	Sliding s	leeve travel
	rod travel mm 2	mm rev/min 3	2		rev/min 5	mm 4	of control lever 7	rev/min 8	mm 3	rev/min 10	mm 11
ca.66	1120 1200 1300 1470	15,0-17 9,2-13 1,0- 7	,6	1	1	•		150 250 400 500	6,5-8,0 3,6-6,1 1,1-2,4 0	1200	8,3
							<b>3</b> a)				

Torque control travel a =

mit

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deliv	rery characteristics 5a peed 50	Starting Idle switching		Torque- travei	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travei mm
1	2	3	4	5	6	7	8	9
1100	135,0-137,0	1135-1145*	600	132,0-136,0	100	190 - 240		
			1200 lisper		225 isper	12 - 16)** ion max.2)**		
(incr	ease by 2,0 c	n³)						./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding si	eeve travel
Degree of deflection	Control	Control rod travel	(la)	Degree of deflection		Control rod travel	Degree of deflection	1	Control rod travel		1
of control lever	rodtravel mm	nm rev/min	(2a)	of control lever	rev/min	mm 4	of control lever	rev/min	mm (3)	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.66	1120 1200 1300 1410	15,0-17 9,2-13 1,0- 7	,6	-	-	-	ca.10	150 250 400 500	6,5-8,0 3,6-6,1 1,1-2,4 0	1120	8,3
							(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed (2b) limitation intermediate speed	Fuel dela high idle :	very characteristics 5a speed 5b	Starting Idle switchir		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
1100	135,0-137,0	1135-1145*	600	132,0-136,0	100	190 - 240		
			1200 dispe	43,0- 53,0 rsion max.4	225 isper	8 - 12 <sub>)**</sub> sion max.2		:
								:

ing values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

EP/RSV 350-1100 P1/310 -

Upper rated s	speed		Intermediate	rated spe	ed	Lower rated	speed		Sliding sleeve travel	
Degree of deffection of control	rev/min  Control  rod travel		of control		Control rod travel	Degree of deflection of control		Control rod travel		0
lever		rev/min (2	lever	rev/min	mm (4)	lever	rev/min	lmm (3)	rey/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.67	1100	16,0		_		ca.31	350	6,0	4000	
	1150	11,7	withou				100	19 - 21	1080	0
	1200	6,0	auxili	ary sp	ring		350	5,7-6,3		
	1150	10,4-12,			ŀ		400	3,2-4,7		
	1200	4,4-7,	7 41 4	ary sp	ring	(3a)	500	0 - 1		
	1350	0,3-1,	٠,							

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed (2b) Ilmitation intermediate speed	Fuel deliv	rery characteristics 5a speed 5b	Starting Idle switchir	fuel delivery 6	Torque- travei	
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	rev/min cm <sup>3</sup> /1000 strokes		cm <sup>4</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	135,0-137,0	1135-1145*	600	132,0-136,0	100	190 - 240		
				dis	350	8 - 12** on max. 2		
						38,0-48,0		
								٠/٠

Checking values in brackets

\* 1 mm less control rod travel than col 2

Output	variat	ion				Adjustment of control-rod
Index	%	n = U/min	$Q = cm^2/1000$	n = U/min	$Q = cm^3/1000$	position from 100% setting mm
T	103	1100	138 ± 1,0	600	136 ± 2,0	+ 0,2
X	95	1100	126	600	124	- 0,5
Q	93	1100	122	600	120	- 0,7
Z	90	1100	117	600	113	- 1,0
0	88	1100	114	600	108	- 1,2
N	85	1100	111	600	104	- 1,4
M	80	1100	106	600	96	- 1,7
L	75	1100	99	600	86	- 2,1
K	70	1100	94	600	76	- 2,5
J	65	1100	89	600	68	- 2,8
I	60	1100	83	600	59	- 3,3

①

Testoil-100 4113

### Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FBW 11,9 b
1. Edition

Εn

PE 6 P 120 A 721 RS 439

RQV 250-1025 PA 608

supersedes

company: FBW

engine:

E 5 A/EU 5 A 206 kW (280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

3,0-3,1
Port closing at prestroke (2,95-3,15) mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	19,6 - 20,0	0,5(0,8)			
250	7,4-7,5	3,5 - 4,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated	speed			Intermediate	rated sp	ed	Lower rated	speed		Sliding s	ieeve travei
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	(a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1060	15,2-17	,8	-	<b>-</b>	-	ca.13	100 250	min.8,5 7,4-7,5		0,7-0,9 2,6-2,9
ca.46		1065-107 1110-114 0 - 1	10				(3a)		60= 2,0mm	750	4,6-4,8 8,0

Torque control travel a = U 34 mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2				Starting Idle switchin		Torque- travel	Control rod	
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
LDA 1000	0,7 bar 196,0-200,0 (193,0-203,0)	1065-1075*	LDA 600	0,7 bar 174,0-180,0 (172,0-182,0)	100	150,0-170,0		9 10,8+0,1 11,4+0,3 10,8+0,3
			LDA 600	0 bar 126,0-130,0 (123,0-133,0)			700	11,2+0,2

Checking values in brackets

\* 1 mm less control rod travel than col. 2

10.81

BOSCH

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

FBW 11,9 b

Pump/governor	Setting	Measurement	Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)
PE6PRS 439 PA 608	0,7	0 0,5 0,4	11,5 - 11,6 9,4 - 9,5 10,9 - 11,1 10,2 - 10,5

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 VOL 12,0 h 2. Edition

En

PE 6 P 120 A 320 RS 3074 RQV 250-1100 PA 564

supersedes

6.81

company:

Volvo

engine:

TD 120 F

283 kW(385 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2,35-2,55)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivary cm <sup>3</sup> /100 strakes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,6+0,1	24,1-24,4	0,5(0,9)			$2,5 \pm 0,1$
250	4,3-4,5	2,3- 2,7	0,5(0,8)			(max.2,5-2,9) **

Adjust the fuel delivery from each outlet according to the values in alter the delivery-valve spring pre-tension accordingly.

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated ap	ed	Lower rated	speed	1		Sliding sleeve travel	
deflection	rev/min Control	Control rod travel	<b>(b)</b>	Degree of deflection		Control rad travel	Degree of deflection		Control roc travel	1		1
of control lever	rod travel	mm rev/min	20	of control	rev/min	mm 4	of control lever	rev/min	mm (	3	rev/min	mm
1	2	3		4	5	6	7	8	9		10	11
max.	1100	15,2-17,	8	-	-	-	ca.11	100	min.6,		200	1,1-1,4
ca.62	12,6 4,0 1350	1140-115 1235-126 0 - 1,0		:			260-355	250	(4,3-4,	5		3,3-3,5 5,1-5,3 8,1
							<b>3</b>					

Torque controi travei a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 20 limitation intermediate speed		Fuel delivery characteristics 5e high idle speed 50		fuel delivery 6	Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4a	rav/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /i/000 strokes	rev/min	trav <del>ol</del> mm
1	2	3	4	5	6	7	8	9
LDA 700	1,2 bar 241,044,0 (238,0-247,0)		LDA	0 bar 148,0-152,0 (145,0-155,0)	100	288,0-308,0 / 16,5-17,5 mm RW	•	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.91

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.
C by Robert Bosch GmbH, D-7 Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany. Imprime en Republique Fédérale d'Allemagne par Robert Bosch GmbH.

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

VOL 12,0 h

-2-

Pump/governor	Setting  Gauge pressure = bar	Measurement  Gauge pressure = bar	diminution Control rod travel- difference mm (1) .
PE 6 PRS 3074 PA 564	1,2	0 0,67 0,23	13,6 - 13,7 9,8 - 9,9 12,5 - 12,7 10,7 - 10,8

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 4. Edition

PE 6P 110 A 720 RS 368 RQV 250-1050 PA 240R

1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ}$ 

supersedes

company:

1.80 Chrysler BS 36

engine:

202kW (275PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings
(2,75-2,95)
Port closing at prestroke
2,90-2,90 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rad travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	14,5-14,6	16,6-16,8	0,4(0,8)			
250	8,7-8,9	2,2- 2,8	0,4(0,7)			
1050	-	C,Sp. 4-5	0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated		1.		intermediate	rated ap		Lower rated	speed		Sliding sleeve travel	
deflection	Control	Control rod travel	<b>(1)</b>	Degree of deflection of control	travel deflection travel			0			
lever	rod travel	rev/min	29		rev/min	mm (4)	of control lever	rev/min	mm 3	rev/min	I
-	2	3		•	5	6		8	9	10	11
ca.68	1050	15,2-17,	8	-	-	-	ca.13	190	min.10,3	250	1,1
	1400	0-1						250	8,7-8,9	600	4,0-4,2
ca.62		1090-110 1230-126					350-500 ③	495-5 700	55 = 2,0 0 - 1	1080	7,6

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ros Test oil ten	elivery 1 stop np. 40°C (104°F) 2	Rotational-speed 20 limitation intermediate speed	Fuel deliv	rery characteristics 5a	Starting idle switching		Torque- travel	Control Control
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA	0,7 bar		LDA	0 bar				
1050	166,0-168,0 (163,0-171,0)		1050	127,0-131,0 (124,0-134,0	100	19,5-21,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
368 - 240R	0,68		14,5 - 14,6
300 - 2.00		0,50	14,0 - 14,1
		0,36	12,9 - 13,2
		0	12,6 - 12,7

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

estoil-ISO 4113

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 11.8 T 3. Edition

PE 6 P 110 A 720 RS 371 RQV 300-1100 PA 455 R supersedes

8.81

1 - 5 - 3 - 6 - 2 - 4  $0 -60-120-180-240-300^{\circ} \pm 0,5 (\pm 0,75^{\circ})$  company: engine:

Daimler-Benz OM 355 A

206 kW(280 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

Port closing at prestroke

2.80-2.90

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Cifference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7	16,0-16,2	0,4(0,8)			
300 600 500	+0,1 5,9-6,1 11,7+0,1 11,0+0,1	1,1 - 1,7 C,Sp. 4 - 5 C,Sp. 4 - 5	0,4(0,7) 0,6(1,0) 0,6(1,0)		;	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed ·	Lower rated	speed		Sliding s	leeve travel
deflection	rev/min Control rod travel mm 2	Control rod travel mm rev/min 22	of control	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm
max.	1100	15,2-17,8				ca.17	100 300	min.7,7 6,1-6,3	550	0,9-2,0 4,1-4,5 5,5-5,9
ca.66		1140-1150 1225-1255 0 - 1,0				<b>3a</b>	430-	500 =2,0		8,2

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed (2b) limitation intermediate speed	Fuel deliv	very characteristics (5e)	Starting Idle switching		Torque- travei	control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm²/1000 strokes	rev/min 8	travei mm
LDA 1100	0,7 bar 160,0-162,0 (157,0-165,0)	1140-1150*	LDA 600 LDA 500	0,7 bar 155,0-159,0 (152,0-162,0) 0 bar 132,0-136,0 (131,0-139,0)		140,0-160,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.82



-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure in grassing XX

MB 11,8 1

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
371 - 455 R	0,7 bar		11,7 - 11,8
		0,39	11,5 - 11,6
		0,35	11,2 - 11,3
		0	11,0 - 11,1

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

①

Testoil-ISO 4113

### Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 e 1. Edition

En

PES 6 P 120 A 320 RS 406

RQV 250-1100 PA 495

supersades

company: RVI

engine:

MIDS 062030

188 kW (256 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,8-2,9 2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pra-tensioning (torque-control valve) mm 6
1100	9,9+0,1	19,0-19,4	0,5(0,8)			
250	4,0-4,2	1,7- 2,3	0,8(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	aed	Lower rated	speed		Stiding	leeve travel
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	deflection of control	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	(1)
1	2	3	4	5	6	7	8	9	10	11
max.	1100 1350	15,2-17,8 0 - 1,0				ca.10	100 250	min.5,6 4,0-4,2	500	0,7-1,0 3,4-3,6 4,8-4,9
ca.66	8,9 4,0	1140-1150 1180-1210							100	6,8
						<b>3a</b>				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		intermediate spc *	ાંગુત idle ક	very characteristics 5e peed 5b	Starting Idle switchin	$\mathbf{\circ}$	Torque- travei	control 5
rev/min	crh³/1000 strokes .	rev/min 🤤	i ∕ 34/min I	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	:	5	8	7	8	9
LDA 1100	0,7 bar 190,0-194,0 (187,0-197,0)	1140-11:00*	LDA	0 bar 141,0-145,0 (138,0-148,0				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

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Test at n =

rev/min decreasing pressure – in ber gauge pressure

RVI 8,8e

-2-

Pump/governor	Setting	Measurement	Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1) .
RS 406 -	0,7		9,9 - 10,0
PA 495		0,33	9,4 - 9,5
		0,27	8,3 - 8,4
		0	8,0 - 8,1

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

### Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 e

En

PE 6 P 120 A 320 RS3048 PE 6 P 120 A 320 RS3046 RQV 250-1100 PA414/2R (1) EP/RSV 200-900 P 4/421R (2) supersedes

company:

engine:

Volvo T(M)D 120 C

Testing with T nozzles and fuel lines 8x2x1000

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pret	stroke	2,60-2,70 (2,55-2,75)	mm (from BDC)	mm (from BDC)							
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6					
700	12,3	21,8-22,1	0,4(0,8)	12,7	21,7 - 21,9	2,5 ± 0,1** (max.2,2-2,9)					
250 700	5,8-5,9 	1,6 - 2,0 C, 4-5	0,4(0,7) 0,6(1,0)	5,8-5,9	0,9 - 1,3	0,3(0,6)					

Adjust the fuel delivery from each outlet according to the values in

In the case of greater dispersion after the delivery-valve spring pre-tensic

#### B. Governor Settings

Upper rated s	peed		Intermediate	e rated ap	eed	Lower rated	speed		Stidings	lesve travel
Degree of deflection of control	rev/min Control rod trave	n wasi	Degree of deflection of control		Control rad travel	Degree of deflection of control		Control rod travel		0
lever	mm	rev/min (	lever	rev/min	mm (4)	lever	rev/min	mm 3	rev/min	mm
ļ	2	3		12	6	7	8	9	10	11
ca.50	1100 1350	15,2-17,8 0 - 1	-	-	-	ca.12	100 250	min.8,5 5,8-5,9	250 800	0,5-1,2 4,6-5,0
ca.48		1140-1150 1235-1265				<b>3</b>	330-3	90 = 2,0	1170	8,3

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter			Fuel delin high idle s	very characteristics 5a	Starting Idle switching		Torque- travel	control 5 Control rod
rev/min	cm³/1000 strokes ·	rev/min 49	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
<u> </u>	2	3	4	5	6	7	8	9
(1) 700	LDA 1,1 bar 218,5-220,5 (215,5-223,5	1140-1150*	LDA 700	0 bar 148,0-152,0 (145,0-155,0 dis	250	205,0-245,0 16-20** pn.max.4(7)		
								./.

Chucking values in brackets

\* 1 mm less control rod travel then col. 2

7.78

BOSCH

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	diate rated	ĺ	Control- lever deflection in degrees 7		rated speed   Control rod   travel   mm	1 9	rque control  Control rod  travel  mm
loose	800	0,3-1,7	NATURAL DESIGNATION OF THE PROPERTY OF THE PRO			ca.23	250	5,3	900	0
ca.55	995-10	5,0 50 =11,7 025= 4,0 0,3-1,7					100 250 315- 450	min.19 5,8-5,9 375=2,0 0 - 1	250	1,2-1,8

#### C. Settings for Fuel Injection Pump with Fitted Governor

	州-ioad stop	6 Rotational- speed limitat.		el delivery paracteristics	Starting f	uel delivery 5	4a idle stop	
Test foil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm 9
(2) 700	217,0-219,0 (214,0-222,0)	940-950*			100 250 cisper:	395,0-435,0 9 - 13** ion max.3(	6)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **□.** Adjustment Test for Manifold Pressure Compensator

Test at n =

Testoil-ISO 4113

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
3048 - 414/2R	0,61		11,8 - 11,9
		0,20	9,6 - 9,8

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

En

Testoil-ISO 4113

#### **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 VOL 10,0 g 1 1. Edition

PE 6 P 110 A 320 RS 229

ROV 250-1100 PA 236/2R

aupersedes

company:

engine:

Vol vo THD 100 D

154.5 kW(210PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,7-9,8	12,1 - 12,3	0,4(0,8)			
250	5,2-5,4	0,9 - 1,3	0,3(0,7)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sleeve travel	
deflection	rev/min Control	Control rod travel	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever		mm rev/min 2a	of control lever	rev/min	mm (4)	of control lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1150	15,2-17,8	-	-	-	ca.11		min.6,8		0,6-1,0
ca.44	0 7	1140-1150		<b>[</b>			250	5,2-5,4	500	2,9-3,2
La.44	8,7	1140-1150 1190-1220	!				305-3	365=2,0mm	800	5,0-5,3
}	1350	0 - 1,0		l					1100	7,7
						<b>3a</b>				

Torque control travel a

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		Rotational-speed 20 timitation intermediate speed			Starting Idle switching		Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,4 bar 121,0-123,0 (118,0-126,0)	1140-1150*	LDA 700	0 bar 112,5-115,5 (109,5-118,5)		320,0-360,0 bei 19,5-21,0 mm RW	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Test at n =

rev/min decreasing pressure - in bar gauge pressure

VOL 10,0 q 1

-2-

			YUL TU,U Y I
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
PE6P RS 229 PA235/2R	0,4	0 0,17	9,7 - 9,8 9,2 - 9,3 9,4 - 9,5

Notes:

(1) when n ≈

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

### Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 g 3. Edition

EΩ

PE 8 P 120 A 920/5 LS 3804

RQV 300-1200 PA 506

supersedes

2.81 Fiat

1 - 8 - 4 - 3 - 6 - 5 - 7 - 2 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75)$ 

company: engine:

331 kW(450 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (3.45-3.65) mm (from BDC)

- Grit Globaling Zir prod	HUGHO	3.45-3.00)	min (noni ezo)			
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,6+0,1	24,3 - 24,7	0,5(0,9)			
300	4,9-5,1	1,9 - 2,5	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

deflection	rev/min Control rod travel mm	Control rod travel mm rev/min 2s	Intermediate Degree of deflection of control lever	rated ap rev/min 5	Control rod travel mm 4	Lower rated Degree of deflection of control tever 7	speed rev/min : 8	Control rod travel	Stiding s	mm
max. ca.59	10.6 4,0 1500	15,2-17,8 1240-1250 1360-1390 0 - 1,0	-	•	-	ca.10 310-405	100 300	min.6,5 4,9-5,1	250 560 880 1200	0,6-0,9 3,8-4,3 5,5-5,7 7,8
						39				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod atop Test oil temp: 40°C (104°F) 2		Rotational-speed 20 limitation intermediate speed	high idle speed (Sh)		Starting idle switching		Torque- travel	control 5
rev/min 1	සත <sup>3</sup> /1000 strokes .	rev/min 49	r <b>e</b> v/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes	rev/min	travel mm
LDA 1200	0,7 bar 243,0-247,0 (240,0-250,0		LDA 1200	0 bar 160,0-164,0 (157,0-167,0		210,0-240,0	-	•

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.82

BOSCH

-2-

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

FIA 13,8 g

Pump/governor	Setting		Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure = bar	mm (1) .
PE8PLS3804	0,70			11,6 - 11,7
PA506			0	8,5 - 8,6
			0,44	10,8 - 10,9
			0,35	9,2 - 9,5

Notes:

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 411

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001(4 SCA 11,0 u 1 1. Edition

PE 6 P 120 A 720 RS 7001

RQV 250-1050 PA 539

supersedes

company:

Saab-Scania

engine:

DS 11

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings 5,00-5,10 Port closing at prestroke (4,95-5,15) mm

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,3+0,1	23,8 - 24,2	0,5(0,9)			
250	3,9-4,1	1,6 - 2,0	0,5(0,8)			

Adjust the fuel delivery from each outlet according to the values in g

#### **B. Governor Settings**

Upper rated	speed	1	Intermediate	e rated sp	eed	Lower rated	speed		Slidings	leeve travel
Degree of deflection of control lever	Control rod travel	Control rod travel mm rev/min (2)	deflection of control	rev/min	Control rod travel	Dagree of deflection of control lever	rev/min	Control rod travel	rev/min	① mm
1	2	3	4	5	6	7	8	9	10	11
ca .68	1050 1350	15,2-17,8 0 - 1,0	-	•	-	ca.9	250 100	4,0 min.6,1	200 500	1,0-1,2 3,8-4,3
ca.59		1090-1100 1210-1240					250	3,9-4,1 70= 2,0mm	800 1050	5,6-5,8 7,6-7,7
						<b>3</b> a				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roo Test oil ten		limitation intermediate speed			Starting Idle switchir	• )	Torque- travel	control 5
rev/min 1	cm <sup>3</sup> /1000 strokes	rev/min 49	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strok <b>es</b> 7	rev/min 8	travel mm
LDA 1000	0,7 bar 238,0-242,0 (235,0-245,0)		LDA 600 LDA 500	0,7 bar 199,0-205,0 (196,0-208,0 0 bar 161,0-165,0 (158,0-168,0)	)	23,0-28,0 bei 20,0-21,0 mm RW		

Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

SCA 11,0 u 1

Pump/governor	Setting		Measurement	diminution Control rod travel- difference
	Gauge pressure =	bar	Gauge pressure = bar	mm (1) .
RS 7001 -	0,7 bar			12,3 - 12,4
PA 539			0,45	12,0 - 12,1
			0,37	11,6 - 11,8
			0	11,4 - 11,5

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 SAU 12,0c

1. Edition

PES 6 P 120 A 420 RS 3049 RQV 250-1000 PA 505

supersedes

company:

Sauer

engine:

D4KT

1 - 4 - 2 - 6 - 3 - 5 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings (3,15-3,35) (3,20-3,30) mm

mm (from BDC)

	2*50-2*30				
Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
11,3-11,4	24,5 - 24,9	0,5(0,8)			
5,3-5,5	2,8 - 3,6	0,8(1,2)			
	C, Sp. 4-5	0,6(1,0)			
					ì
	mm 2 11,3-11,4	Control rod travel  mm cm³/100 strokes 3  11,3-11,4 24,5 - 24,9  5,3-5,5 2,8 - 3,6	Control rod travel  mm cm³/100 strokes 2  11,3-11,4 24,5 - 24,9 0,5(0,8)  5,3-5,5 2,8 - 3,6 0,8(1,2)	Control rod travel  mm cm³/100 strokes 2  11,3-11,4  24,5 - 24,9  5,3-5,5  2,8 - 3,6  Difference cm³/100 strokes mm 2  0,5(0,8)  5,3-5,5  0,8(1,2)	Control rod travel  mm cm³/100 strokes 2  11,3-11,4  24,5 - 24,9  0,5(0,8)  5,3-5,5  2,8 - 3,6  0,8(1,2)

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated	speed			Intermediate	rated ap	eed	Lower rate	1 speed	_	Stiding	lieeve trave.
Degree of deflection of control lever	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	(a) (2a)	Degree of deflection of control lever	rev/min 5	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel mm 3	rev/min	mm 11
ca.68	1000 1250	15,2-17 0 - 1	,8	-	-	<b>-</b>	ca.14	100 250	min.7,0 5,3-5,5	250 350 1050	1,3 2,6-2,8 8,6
ca.68	10,3 4,0	1040-10 1110-11					<b>3</b> a	430-4	180= 2,0		<b>0,0</b>

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed 2b limitation intermediate speed	Fuel delivingh idle s	very characteristics (5a peed (5b)	Starting Idle switchin	• •	Torque- travel	Control rod
rev/min 1	cm³/1000 strokes	rev/min 4a	rev/min 4_	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min	travel mm +0,1
LDA 1000	1,2 bar 245,0-249,0 (242,0-252,0)	1040-1050*	LDA 700 LDA 400	1,2 bar 216,0-220,0 (213,0-223,0) 0 bar 94,0- 98,0 (91,0-101,0)		225,0-235,0 70 (80-190)	1000 900 700	11,3 11,5 11,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

13

## D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure – in bar gauge pressure

SAU 12,0 c

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = ba	Gauge pressure = bar	mm (1) .
3049 - 505	1,2 bar		11,5 - 11,6
		0,65	11,0 - 11,1
		0,32	8,2 - 8,6
		. 0	7,9 - 8,0

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

WPP 001/4
1. Edition

En

PES 6 P 110 A 720/3 RS3036 RQV 300/600-900 PA453 K

supersedes

company:

Mack

engine:

**ETA 676 E** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel injection Pump Settings

Port closing at prestroke

2,40-2,50

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>2</sup> /100 strokes 3	Spring pre-tension/ng (torque-control valve) mm 6
900	14,4	18,8-19,0				
300	5,5	1,1- 2,0				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated a	peed		Intermediat	e reted sp	eed	Lower rated	speed		Sliding	leeve travel
deflection	rev/min Control rod travel	travel	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	Sading a	1
	mm 2	rev/min (2	lever	rev/min	mm ④	iever	rev/min	mm 3	rev/min	mm
<del></del>	-	3	4.	3	6	/	8	9	10	11
ca.66	970 1200	16,2-17,8 0 - 1	3 -	-	-	ca.18	100 300 400	3,8-5,2	600	1,2-2,4 4,5-5,0
ca.54	13,4 4,0	940 - 950 1100-1130				<b>3</b> 8	570	-630 =2,0	960	8,3

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) 2		intermediate speed	Fuel delic high idle s	very characteristics 5a speed 5b	Starting Idle switching		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min	travel mm
<u>'</u>	۷	3	4	5	8	7	8	9
LDA 900	1,6 bar 187,5-189,5	940-950*	LDA 600	1,6 bar 227,0-231,0	100	110,0-170		
			PLE 300 =	79-99 0.740-0.820	300	13 - 22		

Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n =

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rog travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
3036 - 453K	0,46 - 0,52	1,33	
00 00 00 00 00 00 00 00 00 00 00 00 00	, <sub>30</sub>		2 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 SCA 11,0e1 1. Edition

En

PE 6 P 100/720 RS73 PE 6 P 90/720 RS75 EP/RSV 350-1100 P 1/310R

EP/RSV 350-1100 P 1/310R

supersedes company

11,0 e v. 5,71 Scania

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,6 + 0,1

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery S 73 cm <sup>3</sup> /100 strokes 3	Difference cm²/ 100 strokes 4	Control rod travel mm	Fuel delivery S75 cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,6 - 14,2	0,6 0,4	12	8,5 - 9,2	\$73:3,5±0,1**
600	9 12	6,3 - 7,3 12,3 - 13,5		9 12	2,9 - 4,2 7,4 - 8,4	(max.3,2-3,9) S75:2,5±0,1**
200	9	4,1 - 5,2		9	1,8 - 2,8	(max.2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in alter the delivery-valve spring pre-tension \*\*

## B. Governor Settings

350-1100 -

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min   Control rod   travel   mm rev/min   3	intermed	diate rated	speed	Control- lever deflection in degrees 7	Lowe rev/min 8	r rated speed Control rod travel mm	3 To	rque control  Control rod  travel  mm
ca.67	1100 1150 1200	16,0 11,7 6,0	without auxiliary sprin			ca.31	350 100		max.	
<b>2a</b>	1150 1200 1300	10,5-12,5 4,3- 7,8 0,3- 1,0	WILLII	liary	sprin	g	350 420 520	5,7-6,3 2,0-4,0 0,3-1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	Pull-load stop  Stoll temp. 40°C (104°F)  6 Rot Spe			uel delivery naracteristics	Starting fuel delivery 5 4 Idle stop			
rev/min 1	cm <sup>9</sup> /1000 strokes 2	changed to ) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm#1000 strokes	rev/min	Control rod travel mm
1080	144,5-147,5	1120	600	139,0-143,0	100	240-290	350	6,0
				dis	350 persi	13-17 n.max.1,5	**	
				Wasa.				

Checking values in brackets

\* 1 mm less control rod travel than col 2

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1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

#### The numbers denote the sequence of the tests **B.** Governor Settings

1	r rated speed Control r' d travel mm		Intermed	diate rated	speed	Control- layer deflection in degrees 7	- Lower rev/min 8	rated speed Control rod travel mm		rque control Control rod travel mm
ca.67	1100 1150 1200 1150 1200 1300	16,0 11,7 6,0 10,5-12,5 4,3- 7,8 0,3- 1,0	with	il iary	·		350 100 350 420 520	6,0 19 - 21 5,7-6,3 2,0-4,0 0,3-1,0	max.	

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	II-load stop	6 Rotational- speed limitat.	Starting f	uel delivery 5	<b>49</b> Idl			
Test oil to rev/min 1	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm 9
1080	124,5-126,5	1120	600	113,0-117,0 di	100 350 spersio	210-260 9 - 13 n.max.1,5)	350 **	6,0

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

## **B.** Governor Settings

Degree of deflection of control laver	r rated speed  Control rod  travel  mm  2	intermed	liate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	rque control Control rod travel mm
20		-						

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop emp. 40°C (104°F)	Rotational-speed limitat. See Characteristics			Starting fuel delivery 5 Idle stop			
rev/min	cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min	travel mm 9
								·

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4

MB 11,8 b 1

1. Edition

Er

PE 6 P 110/720 RS176 EP/RSV 300-1100 P 1/303R (1) 350-750 P 4/397R (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 11,8b-5,74
Company Daimler-Benz
OM 355 (A)

(1) Schmidt rotary snow plough

(2)Generating sets

A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm3/100 strokes 3	Difference cm²/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>9</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12	11,3 - 12,3	0,4			
600	9 15	4,3 - 5,5 15,5 - 17,2		,		7
200	9	2,6 - 3,6				

Adjust the fuel delivery from each outlet according to the values in

**B.** Governor Settings

..303R (1)

Degree of deflection of control lever	r rated speed Control rod travel mm	t rev/min Control rod travel mm rev/min	Interme	diate rated	speed	Control- lever deflection in degrees	Lowe rev/min	rated speed   Control rod   travel   mm	g To	rque control   Control rod   travel   min
ca .60	1200	16,0 11,0 4,0 6,2-10,2 4,5- 8,6 0,3- 1,0	with	out liary	sprin		300 100 300 450 600	7,0 19 - 21 6,7-7,3 1,8-4,1 0 - 1	1080	0 0,7-1,3

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	III-load stop	6 Rotational- speed limitat		uel delivery paracteristics	Starting fuel delivery 5 4a Idle stop				
rev/min	cm <sup>3</sup> /1000 strokes	Note: changed to .) rev/min 3	rev/min	cm <b>3</b> /1600 strokes 5	rev/min	cm#1000 strokes	rêv/min 8	Control rod travel mm	
(1) 1100	134,5-136,5	1120			100	ca.170,0			

Checking values in brackets

\* 1 mm less control rod travel than col 2

BOSCH

..397R (2)

## **B. Governor Settings**

Degree of	r rated speed Control rod travel mm		Interrne	diate rated	speed 6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	rque control Control rod travel mm
ca.44	750 800 825 750 765 840	16,0 8,6 4,0 ca.11,0 ca.3,8 0,1-1,0	spri	without auxilian spring with auxiliary			350 200 350 400	6,0 19 - 21 5,9-6,1 0 - 1		**

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational-speed limitat. 3 Fuel delivery characteristics			Starting f	uel delivery 5	4e idle stop		
rev/min	emp. 40°C (104°F) cm²/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm³/1 <b>000 s</b> trokes 5	rev/min 6	cm³/1000 strokes 7		Control rod travel mm 9	
(2) 730	135,0-138,0	750-760*	780-	800:3,8mmRW					

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

\*\* Set idle-speed auxiliary spring at 2 mm control-rod travel then turn back 1/2 turn.

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	Intermediate rated speed  4 5 6		Control- lever deflection in degrees 7	Lower rated speed Control rod travel rev/min mm 8		3 To	rque control  Control rod  travel  mm  11
		٠								
29										

## C. Settings for Fuel Injection Pump with Fitted Governor

II-load stop	Rotational- speed limitat.	speed limitat. Characteristics			Starting fuel delivery 5 4a Idle stop			
cm <sup>3</sup> /1000 strokes	changed to) rev/min 3	rev/min	cm³/1000 strokes	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm	
	cm <sup>3</sup> /1000 strokes	speed limitat.  Note: changed to) rev/min	speed limitat. Note: changed to) rev/min  a	speed limitat.  Note:  changed to)  rev/min  rev/min  cm³/1000 strokes	speed imitat.  Note:  changed to)  rev/min  rev/min  rev/min  cm³/1000 strokes  rev/min  cm³/1000 strokes	speed imitat.  Note:  changed to)  rev/min  rev/min	speed limitat.  Note: changed to) rev/min	

Checking values in brackets

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 11,0 e 3. Edition

PE 6 P 100/720 RS31

EP/RSV 350-1100 P 1/307R

supersedes company

5.71 Scania DS 11

PE 6 P 100/720 RS31Y

EP/RSV 350-900 P 1/307R

engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,4+0,1 -31Y,V mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference cm³/	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>2</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1000	12	13,6 - 14,2	0,6		·	3,5±0,1**
600	9 12	6,3 - 7,3 12,3 - 13,5			Ten ( 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	-(max.3,2-3,9)
200	9	4,1 - 5,2				

Adjust the the delivery-valve spring pre-tension accordingly.

B. Go arnor Settings 350-1100 -

1 Uppe	r rated speed		Intermediate rated speed			Lower rated speed			3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
ca.67	1100 1150	16,0 11,7	with	without			350	6,0	1100	0	
	1200	6,0			sprin	ng	100 350	19 - 21 5,7-6,3	500	0	
<b>2</b> a	1150 1200 1350	10,4-12,5 4,4- 7,8 0,3- 1,0	with auxi		sprin		400 550	3,2-4,7	300	1,2-1,8	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop	6 Rotational- speed limitat 3 Fuel delivery citaracteristics			Starting f	uel delivery 5	4a) idle stop	
rev/min	emp. 40°C (104°F) cm3/1000 strokes 2	Note. changed to ) rev/min 3	rev/min	cm³/1000 strokes	rev/min	cm#1000 strokes	rev/min	Control root travel mm
1080	144,5-147,5	1120	600	139,0-143,0	100 350 Jispersid	240-290 13 - 17 ) n.max.1,5)	350 **	6,0

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.78

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#### **B.** Governor Settings

350-900 - 31y

Degree of deflection of control lever	r rated speed Control rod travel mm	Control rod travel mm rev/min	interme	diate rated	speed	Control- lever deflection in degrees 7	_	rated speed  Control rod  travel  mm  9		rque control   Control rod travel mm
ca.52	900 950 1000 980 1000 1150	16.0 12,0 7,0 7,8-10,6 4,2-8,8 0,3-1	with	1 iary				6,0 19 - 21 5,7-6,3 3,0-4,5 0 - 1	880 500 380	0 0 1,2-1,8

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop		Speed striket. Characteristics			tuel delivery 5	49 Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	160,5-163,5	920		dis	100 350 Persio	240 - 290 13 - 17) 1.max.1,5)		6,0

Checking values in brackets

Testoil-ISO 4113

## **B.** Governor Settings

350-900 - 31V

	travel	rev/min   Control rod travel   mm rev/min   3	Intermed	iate rated	speed	Controí- lever deflection in degrees 7		rated speed Control rod travel mm	rev/min	rque control Control rod travel mm
ca.52	900 950 1000	16,0 12,0 7,0	without auxiliary		sprin	ca.28	350 100	6,0 19 - 21	<b>380</b>	0
<b>②</b>		7,8-10,6 4,2-8,8 0,3-1	with		sprin	:	350 400 500	5,7-6,3 3,0-4,5 0 - 1	500 380	0 1,2-1,8

## C. Settings for Fuel Injection Pump with Fitted Governor

	all-load stop amp. 40°C (104°F)	Rotational- speed limitat.		nel delivery paractenstics	Starting I	ruel delivery 5	Idle stop	
rev/min	cm <sup>3</sup> /1000 strokes 2	changed to) rev/min 3	rev/min	cm³/1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
900	158,5-161,5	920		. dis	100 35 <u>0</u> Persid	240-290 13 - 17 n.max.1,5)	350 **	6,0

Checking values in brackets

<sup>\* 1</sup> mm less control rod travel than and ?

## **Test Specifications** Fuel Injection Pumps (A) and Governors

WPP 001/4 SCA 11,0 1 2. Edition

En

PE 6 P 100/720 RS146

EP/RSV 350-1100 P 1/310 350-1100

supersedes 12.71 Scania

**RS146Y** RS146Z

350- 900

**DS 11 A** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke 2,6+0,1

Testoil-ISO 4113

mm (from BDC)

Y = 2.4 + 0.1

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>9</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>9</sup> /100 strokes	mm 6
1000	12	11,6 - 12,1	0,5			2,5±0,1**
600	9 12	8,7 - 4,9 9,5 - 10,9				(max.2,2-2,9)
200	9	2,4 - 3,4				

Adjust the lue to the case of greater dispersion alter the delivery-valve spring pre-tension

B. Governor Settings

350-1100 - 146

	r rated speed		Intermediate rated speed			Lower rated speed			3 Torque control		
deflection	Control rod travel	Control rod travel				Control- lever		Control rod travel		Control rod travel	
of control lever	mm	mm rev/min		-		deflection in degrees	rev/min	mm	rev/min	mm	
-		3	4	5	6	1	8	9	10	11	
ca.67	1100	16,0				ca.31	350	6,0			
	1150 1200	11,7 6,0	with		anuina		100	19 - 21	1		
	4450			lary	spring		350	5,7-6,3	nax.	•	
	1150	10,4-12,5					400	3,2-4,7			
	1200	4,4- 7,8			•		550	0 - 1	1		
<b>(28)</b>	1350	0,3-1,0	auxil	iary	spring						
			L						1	1	

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

9	emp 40°C (104°F)	Rotational- speed limitat  Sa Fuel delivery characteristics			Starting t	uel delivery 5	4a Idle stop	
rev/min	cm <sup>2</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm#1000 strokes	rev/min 8	Control rod travel mm
1100	159,0-161,0	1120	600		225 persio	190-240 10-12 n.max.1,5 40-42 n.max. 4)	350 **	6,0

Checking values in brackets

\* 1 mm less control rod travel than col 2

4.78

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## B. Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	liate rated	speed	Control- lever deflection in degrees 7	- Lower	rated speed  Control rod travel mm	3 To	rque control   Control rod travel   mm
ca.67	1100 1150 1200	16,0 11,7 6,0	witho auxil		spring	ca.31	350 100 350	6,0 19 - 21 5,7-6,3	max.	
22	1150 1200 1350	10,4-12,5 4,4- 7,8 0,3- 1,0	with		spring			3,2-4,7 0 - 1		

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational- speed limitat.		el delivery aracteristics	Starting fuel delivery 5			e stop
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm³/1000 strokes 7	rev/min 8	Control rod travel mm
1100	168,0-170,0	1120	600	163,0-166,0 d	100 225 dispersi	10 - 12	350 **	6,0

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than col 2

## **B.** Governor Settings

50-900	-	1462
--------	---	------

Degree of deflection of control lever	r rated speed Control rod travel mm		Intermed	iate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	I	rque control   Control rod   travel   mm
ca .62	900 950 1000 950 1000 1080	16,0 11,8 ·5,5 10,6-12,6 3,4- 7,6 0 - 1	with	out liary	•		350 100 350 400 460	6,0 19 - 21 5,7-6,3 1,2-3,7 0 - 1	880 450 370	0 0 1,2-1,8

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	6 Rotational- speed limitat		rel delivery paracteristics	Starting I	uel delivery 5	4a Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	Note: changed to) rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	Control rod travel mm
900	155,0-157,0	920		<u>,</u> di	100 225 spersi	190-240 10- 12 , pn.max.1,5	350 **	6,0

Checking values in brackets En

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 SCA 14,0 d 1. Edition

PE 8 P 110 A920/4 LS 3038

EP/RSV 350-1100 P 1/371R

supersedes

Scania

P 1/371R

company engine

(295kW - 101PS)DS 14

1 - 2 - 7 - 3 - 4 - 5 - 6 - 8 ± 0,50  $0 - 45 - 90 - 135 - 180 - 225 - 270 - 315^{\circ} (\pm 0.75)$ 

.. LS 3055

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(3,25-3,45)

mm (from BDC)

1000	Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery . cm <sup>2</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
350   +0,1   0,7 - 1,1   0,2(0,4)   6,3-6,4   0,7 - 1,1	1000	13,4	16,3 - 16,5	0,4(0,8)	13,5	16,3 - 16,5	2.5±0.1**
					+0,1		

Adjust the fuel delivery from each outlet according to the values in the fuel delivery-valve spring pre-tension alter the delivery-valve spring pre-tension

B. Governor Settings

estoil-ISO 4113

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min 3	Intermed	diate rated	speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	3 To	rque control Control rod travel mm
loose	800 x =	0,3-1,0 5,2				ca.31	350 100	4,0 min.19	-	-
ca.67	4,0	1140-1150 1200-1240 0,3 -1,7					350 385-41 500	4,4-4,6		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

	ull-load stop emp. 40°C (104°F)	Rotational- speed limitat		uel delivery naracteristics	Starting (	fuel delivery 5	4a idle stop	
rev/min	cm <sup>9</sup> /1000 strokes	changed to ) rev/min 3	rev/min	cm <sup>2</sup> /1000 strokes	rev/min	cm#1000 strokes	rev/min	Control rod travel mm
1000	163,0-165,0 (160,0-168,0)	1140-1150*	600	164,0-168,0 (161,0-171,0)	100 350 ispers	190-240 4,0mm RW on max.2(4	))**	
								./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

2.79

Geschaftsbereich KH. Kundendienst. Kfz. Ausrustung. F. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

#### **B. Governor Settings**

371 - 3055

(1) Uppe	r rated speed	rev/min	Intermediate rated speed			(4)	- , Lower	3 Torque control		
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control- lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca.31	350	5,8		
	×	= 5,2					100 350	min.19 6,3-6,4		
ca.67	12,5	1140-1150					525-585	= 2,0		:
29	4,0 1350	1240-1275 0,3-1,7					650	0 - 1		
			l							<u></u>

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	li-load stop	6 Rotational- speed limitat.		el delivery paracteristics	Starting fuel delivery 5 4a Idle stop				
Test oil temp. 40°C (104°F) rev/min cm³/1000 strokes 1		Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm 9	
1000	163,0-165,0 (160,0-168,0)	1140-1150*	600	164,0-168,0 (161,0-171,0) di	100 350 spersi	190-240 6,3-6,4mm bn.max. 2	RW (4)		

Checking values in brackets

Testoil-ISO 4113

\* 1 mm less control rod travel than.col. 2

## **B. Governor Settings**

	deflection   traver   traver   of control   mm   mm rev/min		Intermed	Intermediate rated speed  4 5 6			Control- lever deflection in degrees 7  Lower rated speed  Control rod travel mm  prev/min mm  9			Torque control Control rod travel mm 10 11		
20												

## C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	Rotational-speed limitat			Starting f	uel delivery 5	Idle stop	
rev/min	emp. 40°C (104°F) cm³/1000 strokes 2	changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min: 6	cm <sup>3</sup> /1000 strokes 7		travel mm 9
				. ,		·		

Checking values in brackets

**VDT-WPP 001/4** 2. Edition

PES 6 P 120 A 420 RS 297.

RO 200/1100 PA 279D

3.80 supersedes

company:

Saurer

engine:

D 2 KUT

Testing with T nozzles and fuel lines 8x2x1000

Markering for start of pump delivery + 17° camshaft BTDC

176 kW (240 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,3 - 3,4

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Spring pre-tensioning (torque-control valve) mm 6
1000	12	25,1 - 25,8	1,0		
600	6 15	6,2 - 7,4 30,5 - 32,9			
200	6	1,8 - 2,8			
			,	:	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin PAG che rev/min i	Control rod		•		rev/min	Idle spec Setting p rev/min 7	Control rod travel	Test spe	Cifications 5 Control rod travel mm	rev/min	Control rod	3)
550	15,7-16,3	550	16,0	1120 1150 1200 1250	14,6-15,0 8,8-13,3 0 - 7,3 0	500	0	100 200 300 410	4,9-6,9	850 °	15,8-16,0 15,4-15,6 15,0-15,3	

Torque-control travel on flyweight assembly dimension a =

0,3

Spéed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever pp. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting f	tuel delivery 6
rev/min	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes	rev/min 6	red travel cm <sup>3</sup> /1000 strokes:/ mm 7
LDA 1100 LDA 1100 (incr	0,7 bar 206,0-208,0 0 bar 143,0-149,0 ease by 3,0 cm³)		LDA 700	0,7 bar 171,0-173,0	150	18,5 - 20,5

Checking values in brackets

4.82

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

297 -

279 D

Pump/governor	Setting		Measurement	Control rod	trave	diminution difference
	Gauge pressure =	bar	Gauge pressure = ba	r mm	(1)	
297 - 279 D	0,33 - 0,36				- 0	,1
			0,06 - 0,07	ca.	- 1	,8
				1		

Notes:

(1) when n =

1100

rev/min and gauge pressure 7

bar (= maximum full-load control rod travel)

Testoil-ISO 411

VDT-WPP 001/4 BOS 12,3 f

2. Edition

PE 6 P 120 A 721 RS 217

RQ 250/1100 PA 131 DR (1) RQ 250/1050 PA 289 DR (2) supersedes

company: engine:

Büssing S 12 DA 62

Testing with T nozzles and fuel lines 8x2x1000

(1 - 320 PS)

(2 - 300 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

2.8 + 0.1

A. Fuel Injection Pump Settings

 $^{+0,15}_{-0,05}$ )

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	19,6 - 20,4	0,8			
600	9 15	9,6 - 11,0 21,3 - 23,2				
200	9	5,0 - 6,2				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RQ .. 131 DR (1)

			_					pecifications (5)			
rev/min	Control rod travel mm	rev/min 3	Control red travel mm 4	Control red travel rnm 5	rev/min 6	rev/min 7	Control rod travel rram 8		Control rod travel mm		Control rod travel mm
500	15,7-16,3	500	16,0	1120 1150 1200 1250	14,7-15,0 9,0-13,4 0 - 6,7 0		0		4 3-6 3		5,8-16,0  5,0-15,2

Torque-control travel on flyweight assembly dimension a = 0,3

Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

	control lever np. 40°C (104°F)	Control rod stop	Fuel deliv	ery characteristics	Starting fuel delivery Idle speed			
rev/min 1	cm <sup>3</sup> /~1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes	rev/min	red travel cm <sup>3</sup> /1000 strokes:/ mm		
(1- 1100	0,75 bar) 241,0-243,0 0 bar		0,75 700 500	bar 202,0 - 206,0 199,0 - 205,0	100	ca. 16mm RW		
1100 (inc	212,0-216,0 rease by 3,0 cm <sup>3</sup> )							

Checking values in brackets

10.75

**B** Governor Settings

Checking of slider PRG check Control rod travel rev/min mm	Full-load speed re Setting point Control red travel rev/min mm	Test specifications (4) Lontrol rod travel mm rev/min	Idle speed regula Setting point Control red travel mm	Test specifications Control rod Iravei mm 10	Control rod travel mm
500 15,7-16,3	500 16,0	1100   6,5-12,5 1130   0 - 8,0 1180   0		150 6,6-8,0 250 4,5-6,5 350 1,0-3,3 420 0	750 15,7-16,0 950 14,8-15,0

Torque-control travel on flyweight assembly dimension a

0,35

Speed regulation At 1090-1105

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever np 40°C (104 F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting for	uel delivery 6
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /- 1000 strukes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm 7
1050	0,7 bar) 224,5-227,5		0,7 700 0 500	bar 193,5 - 198,5 bar 121,0 - 125,0	100	ca. 16 mmRW

Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

Test atn =

rev/min increasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure bar	Gauge pressure = bar	mm (1)
217 - 131 D	0,23 - 0,26	0,43 - 0,47	ca. 5,2 mm
217 - 289 D	0,20 - 0,24	0,49 - 0,52	ca. 2,5 mm
			·

Notes

1100

0,75

(1) when ก =

1050

rev/min and (

0,7

bar (= maximum full-load control rod travel)

En

Festoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 VOL 10,0i

1. Edition

PE 6 P 100 A 320 RS365

RQV 250-1100 PA 232/2R

supersedes

company:

Volvo

engine:

TD 100 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,0-13,1	14,5-14,8	0,4(0,6)			2,5+0,1** (max 2,2-2,9)
250 700	6,0-6,1 	1,0 - 1,4 C 4-5	0,2(0,5) 0,6(1,0)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated and Degree of	peed rev/min	Control rod				Lower rated Degree of	speed	Sliding sleeve travel		
deflection of control lever 1	Control rod travel mm 2	travel 🔾	deflection of control lever	rev/min 5	mm 4	deflection of control lever 7	rev/min 8	Control rod travel	rev/min	mm 11
ca.50	1100 1350	15,2-17,8 0 - 1	-	-	-	ca.12	100 250	min.9,0 6,0-6,1	250 430	1,1-1,2 4,4-4,6
ca.45	12,0 4,0	1140-1150 1250-1290					350-	380= 2,0	1140	8,2
						<b>3a</b>				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten					Starting idle awitchir		Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes .	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travei mm
1	2	3	4	5	6	7	8	9
LDA 700	0,5 bar 145,0-148,0 (143,0-150,0		LDA 700	0 bar 115,0-118,0 (113,0-120,0		220 - 260 11 - 15**		
								•/•

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Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

VOL 10,0 i

Test at n =

rev/min decreasing pressure – in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travet- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1) .
365 - 232/2	0,26	0,10	12,8 - 12,9 11,4 - 11,5
			,

Notes:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

\*\* In the case of greater dispersion alter the delivery-valve spring pre-tension accordingly.

Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 DAF 11,6c 3. Edition

<u>En</u>

PE 6 P 110/320 RS 198

RQ 200/1100 PA 24 R RQV 200-1100 PA 37 R ./. EP/RSV 200-1100 P 1/326 R ./. supersedes

2.74 DAF

company: engine:

**DKA 1160** 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

 $\binom{+0,15}{-0,05}$ 

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	13,2 - 13,9	0,5			
600 600	9 12	6,4 - 7,6 13,2 - 14,7				
600 200	15 9	19,0 - 20,9 4,8 - 6,0				

Adjust the fuel delivery from each outlet according to the values in

## **B. Governor Settings**

#### RQ 200/1100 PA24R

	ng of slider	Full-load	speed re	gulation	_	!dle spec	ed regula	ation	-	Torque o	control	
PRG ch		Setting po	oint	Test spec	cifications (4)	Setting p	ooint	Test spe	cifications (5)	'		(3)
rev/min	Control rod travel mm	rev/min 3	Control red travei rnm 4	Control rod travel rnen 5	rev/min 6	rev/min 7	Contrel rod travel	rev/min 9	Control red travel	rev/min	Control rod travel mm	
500	15,7-16,3	500	16,0	1120 1150 1180 1230	15,6-16,0 7,7-13,5 0 - 8,6 0		0	100 200 300 340	6,7-8,1 4,4-6,5 0 -2,2 0	-	-	

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stc 2	Fuel deliv	ery characteristics	Starting f	uel delivery d G
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rov/min 3	rev/min 4	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	contained cm <sup>3</sup> /1000 strokes / mm
850	117,5 - 120,5 (115,5 - 122,5)				100	24,5 - 25,5

Checking values in brackets

2.77

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l	Ö
	<u>~</u>
l	_

Upper rated s	peed			Intermediate	rated spe	ed	Lower rates	l speed		Sliding sl	eeve travel
Degree of deflection		Control rod travel	(1a)	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel		0
of control lever	rodtravel mm	mm rev/min	(2B)	of control lever	rev/min	mm (4	of control lever	rev/min	mm ③	rev/min	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1100	14,8-17 10,2-14 5,7-10 0- 7	,2 ,4				ca.12	100 200 300 500 700	6,3-8,0 4,4-6,8 3,3-3,8 1,7-3,1 0		

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	3100	Rotational-speed (2b) Ilmitation Intermediate speed	Fuel delic high idle s	very characteristics (58)	Starting Idle switching		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm¥1000 strokes	rev/min 8	travel mm 9
see R	Q	1120						

Checking values in brackets

\* 1 mm less control rod travel than col. 2

## B. Governor Settings

EP/RSV 200 - 1100 P 1/326

Upper rated s	peed		Intermediate	rated spe	ed	Lower rated	speed		Sliding sl	eeve travel
Degree of deflection		Control rod (ia			Control rod travel	Degree of deflection	ı	Control rod travel		1
of control lever	rod travel mm	rev/min (2a	of control lever	rev/min	mm (4)	of control lever	rev/min	mm ③	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
ca.68	1100 1180 1220 1200 1240 1310	16,0 10,2 6,0 5,6-9,6 2,0-5,6 0 - 1	withou spring with a spring	ıxilia		ca.29	200 100 200 300 400	6,0 19 - 21 5,7-6,3 1,8-3,8 0 - 1	1080 200	0 0 0,3-0,5

Torque control travel a =

me

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	livery stop p 40°C (104°F) 2	Rotational-speed (2b) Ilmitation intermediate speed (4a)	Fuel deln high idle s	rery characteristics 58 peed 50	Starting Idle switching	fuel delivery 6	Torque- travel	Control roc
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>8</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
		1120						
In ac	cordance with	special name	plate	on pump!				

Checking values in brackets

2

Festoil-ISO 4113

# Test Specifications Fuel Injection Pumps ② and Governors

40

VDT-WPP 001/4 DAF 11,6 a 3. Edition

En

PE 6 P 110/320 RS 109

RQ 200/1100 PA 24 R RQV 200-1100 PA 37 R EP/RSV 200-1100 P1/326 R supersedes

8.72

company: engine:

van Doorne DKA 1160

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,8 + 0,1

mm (from BDC)

Rotational speed . rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-sontrol valve) mm 6
1000	12	13,2-13,9	0,5			
600 600	9 12	6,4- 7,6 13,2-14,7				
600 - 200	15 9	19,0-20,9 4,8- 6,0				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

RQ .. PA 24 R

Checkin PRG che rev/min 1	Control rod travel	Full-load s Setting po rev/min 3			rev/min	Idle spec Setting p rev/min 7	Control rod travel	Test spe	cifications 5 Control rod travel mm	Torque o	Control rod
	15,7-16,3 kaway not re n=1120	500	16,0	1100 1140 1170 1210	15,7-16,0 4,8-12,4 0 - 7,2 0		0	100 200 300 390	6,9-8,1 4,4-6,4 1,6-3,8 0	-	-

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delivery characteristics			Starting fuel delivery Idle speed		
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm³/-1000 strokes 5		rev/min	Control rad travel cm <sup>3</sup> /1000 strokes:/ mm	
1090	118,0 - 120,0	1120				.100	ca.24	
(inc	rease by 1,0 cm²)				at 🖫		./.	

Checking values in brackets

11.75

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung. © 1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Fédérale d'Allemagne par Robert Bosch GmbH.

Upper rated s	peed			Intermediate	rated spe	ed	Lower rated	speed		Sliding sleeve trave	
		Control rod travel mm rev/min		Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
ca.68	1100 1150 1200 1240 1320	14,8-17 10,2-14 5,7-10 0 - 7	1,2				ca.12	100 200 300 500 700	6,3-8,0 4,4-6,8 3,3-3,8 1,7-3,1	•	-
							<u>3a</u>				

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem		Rotational-speed (20) limitation intermediate speed	Fuel deliv	need ()	Starting Idle switchir		Torque- travel	Control od
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm3/1000 strokes 7	rev/min 8	travel mm
1090	118,0-120,0	1120			100	ca. 24		

Checking values in brackets

## **B.** Governor Settings

EP/RSV ..326

per rated speed gree ofray/min Control rod								speed		Sliding s	ecve travel
gev/min	Control rod	(ta)	Degree of deflection			i	Degree of deflection		Control rod travel		0
rod travel		(2g)	of control lever	rev/min	mm	4		rev/min	тт (3)	rev/min	mm
2	3	$\smile$	4	5	6	_	7	8	9	10	11
1100	16,0						ca.29	200	6,0	1080	0
1180	10,2			auxi	iary			100	19 - 21	250	•
		_	spring					200	5,7-6,3	350	0
			udeb a	W 47 42	L.,			300	1,8-3,8	200	0,3-0,5
	0 - 1	0	1 .	XIIIa	LÀ			400	0 - 1		
1310	0 - 1		apr my				<b>3</b>				
	rgy/min Control rod travel mm 2	Televimin Control rod travel mm rev/min 2 3 1100 16,0 1180 10,2 1220 6,0 1200 5,6-9,1240 2,0-5,	rey/min Control rod travel rod travel mm rev/min 2a 3 1100 16,0 1180 10,2 1220 6,0 1200 5,6-9,6 1240 2,0-5,6	Control rod Tales of deflection of control rod travel mm rev/min 2a 2 4 1100 16,0 1180 10,2 without 1220 6,0 spring 1200 5,6-9,6 1240 2,0-5,6 with at	Control rod travel from rev/min rev/min 22 28 24 5  1100 16,0 1180 10,2 withou auxi 1220 6,0 spring 1200 5,6-9,6 1240 2,0-5,6 with auxilia	Control rod travel frod travel mm rev/min 28 2 4 5 6 1100 16,0 1200 5,6-9,6 1240 2,0-5,6 with auxiliary	Control rod (a) Degree of deflection of control rod travel mm rev/min (2a) 2 4 5 6 Control rod travel mm (4) 5 6 1100 16,0 1180 10,2 without auxiliary 1200 5,6-9,6 1240 2,0-5,6 with auxiliary	Degree of deflection of control rod lawer mm rev/min 28 28 28 28 28 28 28 28 28 28 28 28 28	Control rod   Control rod	Degree of deflection of control rod travel mm rev/min   Degree of deflection of control rod travel mm rev/min   Degree of deflection of control lever   rev/min mm   Degree of deflection of control lever   rev/min mm   Degree of deflection of control lever   rev/min mm   3   9	Control rod   Control rod

Torque control travel a =

mm

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem		Rotational-speed (2b) limitation intermediate speed (4a)	Fuel deliv high idle s	rery characteristics 5a peed 5b	Starting Idle switching		Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/m:n	cm <sup>8</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9 5
In ac	cordance with	special name	plate	on pump!	7:			

Checking values in brackets

<sup>\* 1</sup> mm less control rod travel than col. 2

estoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps (2) and Governors

WPP 001/4 SCA 8,0 a 3. Edition

PE 6 P 100/720 RS140

250/1250 PA102R

RQV 200-1200 PA101R

PE 6 P 100 A720 RS201

RQV 200-1200 PA170R EP/RSV 350-1200 P1/310R ./.

12.72 company: Scania

engine:

supersedes

**DS 8** 

Port-closing test with/without ROBO diaphragm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings 2,5 + 0,1

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200 600 225 1300	13,5 13,5 6 6	12,2-12,6 11,3-11,7 1,0- 1,2 2,9- 3,4	0,5			2,5 ± 0,1** (max. 2,2-2,9)

Adjust the indicate the delivery-valve spring pre-tension accordingly.

#### **B. Governor Settings**

RQ.. 102R

Checking of slider PRG check Control rod travel rev/min mm 1 2	①	Full-load : Setting po rev/min 3	•		rev/min	Idle spec Setting p rev/min 7	Control rod travel		cifications (5) Control roci travel mm	Torque o	Control rod (3)
750 15,6-16	,4	750	16,0	1270 1320 1380 1420 1500	15,6-16,0 10,3-14,4 3,5-10,0 0 - 7,8 0		0	180 250 400 500 630	7,0-8,1 5,5-6,8 2,9-4,4 1,3-2,8 0		

Torque-control travel on flyweight assembly dimension a =

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever pp. 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 3b	Starting f	uel delivery d G
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rėv/min 4	cm <sup>3</sup> /~1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes:// mm 7
1200	123,0-125,0 (13,5±0,5mmRW)		600	disp	100 225 ersior 1300 ersion	190 - 240 11 - 13 max.1,5)** 29 - 34 max. 4 )

Checking values in brackets

10.77

①

Testoil-ISO

Upper rated s	peed			Intermediate	rated spe	peed Lower rated speed				Sliding sleeve trave	
Degree of deflection of control lever	rev/min Control rodtravel mm	travel	$\sim$	deflection of control	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel	rev/min	mm
ca.66	1240 1300 1450 1590	15,0-17 11,3-14 0,6- 7 0	,9	•	•	-	ca.10	100 250 400 530	6,4-8,0 3,9-6,0 1,7-3,2 0	300 600 1240	1,6-2,4 4,3-4,6 8,2

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	t stop	Rotational-speed (2b) imitation intermediate speed	Fuel deliv	very characteristics (5a) speed (5b)	Starting f Idle switchin	$\sim$	Torque- travel	-control 5
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm3/1000 strokes	rev/min	travel mm
1	2	3	4	[5	6′	7	<u> 8</u>	19
1200 (13,5	123,0-125,0 ± 0,5mm RW)	1230-1240*	600		225	11 - 13 ion.max.1,5) 29 - 34	**	

Check

iues in brackets

\* 1 mm less control rod travel than col. 2

#### **B.** Governor Settings

EP.	/RSV	3	10R
	/ INJ T		

Upper rated	speed			Intermediate	rated sp	ed		Lower rated	speed			Slidings	eeve travel
Degree of deflection of control lever	rod travei mm	Control rod travel mm rev/min (	(1a) (2a)	Degree of deflection of control lever	rev/min	Control re travel mm		Degree of deflection of control lever	rev/min	Control ( travel mm	rod 3	rev/min	mm 1
ca./1	1200 1250 1300 1250 1320 1420	16,0 11,9 6,3 10,8-12 2,4- 6 0,3- 1	,0	withou auxili with auxili	ary s	ring ring	:	ca.31	350 100 350 400 520	6,0 19 - 5,7-6 3,3-4		10	11

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem rev/min	stop np 40°C (104°F) 2	Rotational-speed (2b) imitation intermediate speed (eev/min 3	Fuel deliv high idle s rev/min 4	very coaracteristics 58  posed 50  cm <sup>3</sup> , 1000 strokes  5	tuel delivery 6 ng point cm <sup>4</sup> /1000 strokes 7	Idle	Control Control rod travel mm
1200 (13,5	123,0-125,0 ±0,5 mmRW)	1230-1240*	600		- 10 - 14 9n.max.1,5)** 34 - 44 9n.max. 4)	350	6,0

Checking values in brackets